SYNERGISTICS OF INDUSTRIAL INTEGRATION IN THE MAGHREB COUNTRIES (ALGERIA - MOROCCO - TUNISIA)

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SYNERGISTICS OF INDUSTRIAL INTEGRATION

IN THE MAGHREB COUNTRIES

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SUMMARY

The programs of development in the developing countries are centered on industrialization. The industrialization phenomenon is considered as the key for rapid growth. The results, however, often fall short of expectations. After their independence, the Maghreb countries inherited an agricultural economic structure oriented towards Europe. Aware of the lack of industrial base, and the existence of abundant natural resources, the three countries started their industrialization programs as a means to recover their economic independence from other nations. During these programs, the three countries encountered growing obstacles to industrialization. These obstacles are expected to become larger in the future. Some of the common problems are the following: Weak economic structure, low savings (low accumulation), high unemployment rate, small markets, lack of capital and technology, traditional industries, high rate of underutilization of the existing industrial capacities, and lack of skilled labor. As exporters of raw materials, the three countries are trying to implement a new strategy by developing domestic industries which can transform these materials into semi-finished or finished products. This will generate added value within the countries and reduce the uncertainties of price fluctuations on the international market. It appears that the idea of industrial integration among the three contries can be considered as a matter of urgency for them all.

The objective of this study is to answer some questions such as: What will be the effects of a regional market or other industrial

integration schemes on the area? What will be the advantages deriving from industrial integration within the area? The study shows the need for the development of capital goods and heavy industries, in which economies of scale and strong regional interindustry effects can be expected. The study also suggests detailed feasibility analysis for each industrial sector and for each product to reach an optimum allocation of industries within the area. The approach suggested is as follows:

- Estimate the demand of each country for a specific industrial commodity.
- Evaluate the costs of production for the commodity in the three countries.
- Evaluate the costs of transportation to the different markets within the area.
- Estimate the location of the industrial plant among the three countries.
- Evaluate the welfare benefits of the industrial implementation with regard to the other countries.

The study indicates that industrial integration within the Maghreb countries seems feasible. The integration can have dynamic effects on the Maghreb economies by promoting economic growth, trade, opening new avenues for regional imports substitution. It will permit the existing industries to run at full capacity, and better utilize high industrial investments. The industrial integration will also encourage vertical and horizontal specialization and promote industrial research at the regional level. The large industries (economies of scale) will benefit from extended markets. To reach this stage, however, the three countries must overcome complex technical, economical, and political problems.

CHAPTER 1

INTRODUCTION

1.1 Problem Statement

Achievement of economic development in most developing countries often fails short of expectation. The record is so poor that it sometimes leads to disillusionment and the abandonment of plans for development. The reaction against development is unwarranted where disappointment arises from excessively high expectations. The different approaches to development very often appear ill-fitted to the needs of low incomes and the domestic realities of the countries. The failure of these approaches raises criticism among developers and planners.

The programs of development and the proportion of national investment that flows into the industrial sector demonstrate the importance attached by developing countries to their programs of industrialization. Industrialization has always been considered the very basis of economic development. But as we know, such industrialization programs are very costly for countries of low income, and which do not have natural resources.

The theories of polarized development, which are based on development centers (complex), are given increased attention in the search for tools to solve problems of less industrialized countries. Through the integration process, the development centers give birth

to peripheral industries, which act as satellite industries.

Industrial integration of the Maghreb countries in order to promote a rapid self-sustaining growth and enlarge market size to absorb the existing industrial capacities. It will also promote the economic welfare, and encourage the intra-trade in the area. The integration process will generate horizontal and vertical specialization, which will increase the economic efficiency. This will also eliminate the development of duplicate industries within the area. However, industrial integration will face the political divergences which co-exist in the area. These divergences are characterized by the socialist republic of Algeria, a republic with liberal economic policy in Tunisia, and a constitutional monarchy in Morocco.

Potential gains from such integration in developing countries seem obvious and significant, but the obstacles are many and the changes needed to bring about integration involve complex technical, economic, and political problems.

The idea of Maghreb countries integration is an old dream, encouraged by the natural, existing unity based on the culture, and the geography of the region. Since the three countries share a common Mediterranean coast, climate and cultivation; and occupy the entire northern shore of the Sahara, the Maghreb is easily thought of as a geographic unit. The three countries cover an area of 1,157,400 square miles (Algeria; 920,000 square miles, Morocco; 174,000 square miles, Tunisia; 63,400 square miles) and

a coastal line of 2,270 miles (Algeria; 620 miles, Morocco, 850 miles, Tunisia; 800 miles).

Figure 1 illustrates the map of the area with natural resources locations. In addition to other common characteristics, the three countries of the region are encountering growing obstacles to industrialization which are likely to become even larger in the future. In spite of the disparities in their present general industrial and economic development levels, industrial integration is a matter of equal urgency.

1.1.2 Purpose of the Research

The objective of this study is to produce a plan for the industrial integration of the Maghreb countries. To achieve this objective, the study seeks to answer such questions as the following: What will be the effects of a regional common market or other industrial integration scheme on the area? What will be the consequences that may stem from the marked disparities in the industrial development levels of the three countries? What will be the advantages deriving from an industrial integration in the area? What kind of industries should be developed in the framework of the integration process.

1.1.3 Approach of the Research

To achieve the objective the following approach will be followed: First, since the Maghreb is composed of underdeveloped countries, it is necessary to analyze the underdeveloped economies in general, to understand their dynamism, and identify their

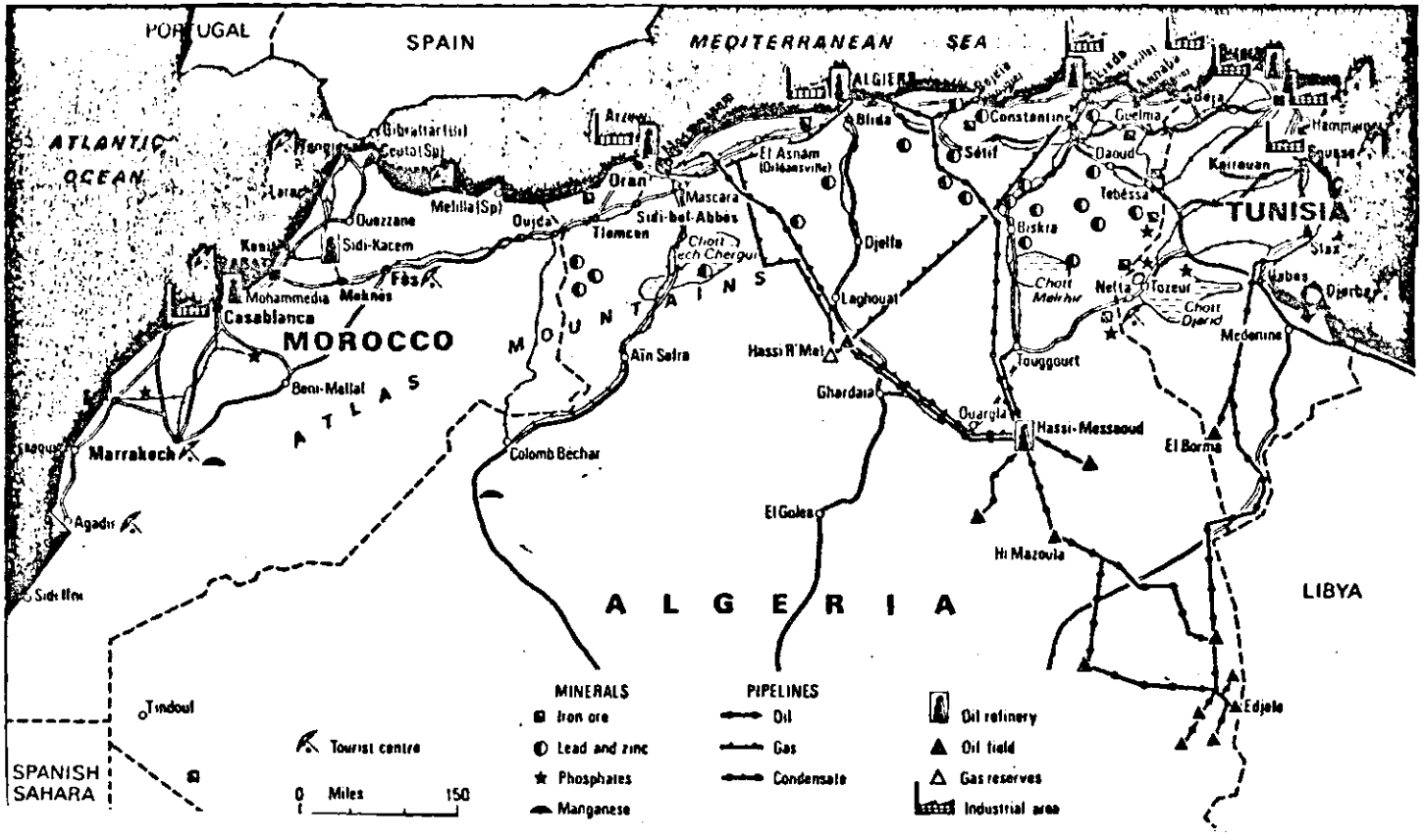

Figure 1. Map of the Maghreb Countries and Natural Resource Locations

characteristics. Second, since the development of future industries in the area will be based on the availability of natural resources. It is appropriate to survey the natural resource capabilities of the Maghreb countries. Third, the detection of industrial similarities and production patterns is very significant for the area. This will be achieved through an analysis of the present stage of industrial development in the three countries. Fourth, in many developing countries, integration processes are done on the basis of political alliance rather than objective economic conditions. To illustrate the significance of this latter aspect, the identification of economic factors which can contribute to the integration process is necessary.

The thesis will be presented in seven chapters. The first chapter focuses on the problem identification, purpose and procedure of the study, and summary. Chapter II is composed of three sections: (1) literature survey, (2) definitions of theoretical concepts, and (3) lessons from integration experiences based on industrialization (Latin American and African cases). Chapter III deals with the economic analysis of the Maghreb countries, and a review of the over-all industrial development policies. This will permit us to study the existing growth trends in each country, the industrial output of the region, natural resources availability, the industrial characteristics, and the Maghreb industrial potential. In the fourth chapter of the study, identification and analysis of economic factors which can contribute to the integration

process will be presented. Emphasis will be put on import-export analysis to determine industrial investment opportunities. In the fifth chapter, an industrial program is presented to achieve the industrial integration of the Maghreb countries. Chapter VI is devoted to the analysis of the implications of the industrial integration. Chapter VII includes the conclusion and recommendations.

CHAPTER II

LITERATURE SURVEY

Economists have traditionally measured the level of economic development by the level of per capita gross national product. Today, the validity of this measurement is questionable. The theories of development and underdevelopment are becoming more and more controversial. As a result, there is confusion concerning the definitions and meanings of development and underdevelopment concepts. In the recent literature on growth and development, the following definitions retained our attention.

- o "Development is the improvement of the economic and social conditions of people."
- o "Development is the advances of societies and their efforts at organization as a result of the action potential created by the continuance of the applied sciences and productive technologies."
- o "Development is the transition of some earth's population from less human, to more human phase."

2.1 Different Approaches to Development

In this section findings through the literature survey will be presented. Five conceptions, which attempt to explain and analyze the developing economies are studied.

2.1.1 First Conception

Underdevelopment is defined as a coexistence of a set of unfavorable symptoms by many economists in the field of development (1-2). It is also defined as a social backwardness characterized by predominant non-capitalist maturation, or an existing vicious circle, or lack of capital. Too much ambiguity surrounds the symptoms of underdeveloped economies. Some economists consider them as the causes of underdevelopment, and some others consider them as consequences of underdevelopment. Each author of this conception tries to list these symptoms. For instance, Lacoste distinguishes fifteen symptoms of underdevelopment as follows:

- Insufficient food
- Agriculture very weak
- Low gross national product, and low standard of living
- Limited industrialization
- Low energy consumption
- Economical subordination
- Weak commercial sector
- Retarded social structures
- Low rural development
- Low national integration
- High unemployment
- High rate of birth
- Inadequacy of medical care
- High rate of illiteracy
- Lack of awareness

Leibenstein [3] distinguishes thirty five symptoms presented under four groups:

1) Economical symptoms

2) Demographic symptoms

3) Technological symptoms

4) Cultural and political symptoms

Some other scholars [2] [4] emphasize the demographic symptoms and present the follwing hierarchy:

- High population growth rate
- Dominant primary activities (extraction and agriculture)
- Lack of capital
- Unbalanced and rigid social structures
- Customs and traditions
- Resistance for change from the population

The list of these symptoms is very ambiguous. We can notice the circularity of the concept used. We also do not know which symptoms are determinant, or determined, and which are relative or absolute. In this conception, the authors define the characteristics of underdevelopment by opposition to those which exist in the developed economies. Thus they try to define underdevelopment through development. The definition is of no help in efforts to achieve development since it deals with characteristics rather than causes.

2.1.2 Second Conception

Underdevelopment is referred as an historical conception by T. Szeuler [2] and later developed by Rostow [5]. The authors

define and identify underdevelopment as a preceeding stage comparatively to the phenomenon of development in our days. So underdevelopment is considered as a retarded system, with regard to development.

Collin Clark and A.G.B. Fisher [6] were the first to try to link this theory to societies according to the degree of their development with regard to the following situations: C. Clark and Fisher classified sectors as primary, secondary, and tertiary industries. By primary, they refer for the most part to agriculture, mining and fishing. Secondary industries refer to manufacturing and construction. Tertiary industries are related to the services. The authors claim that the relationships between the proportions of the population in these sectors and the economic progress holds at least approximately. As progress is made, the proportion in the primary industries declines steadily, the proportion in the secondary industries grows, reaches a certain plateau, and then either stops or declines somewhat, while the proportion in the tertiary industries seems to grow steadily.

Some controversies have arisen with respect to the tertiary industries, as explained by Clark and Fisher. P.T. Bawer and B.S. Yamey [7] argued that a high proportion of the active population of some backward economies do engage in the provision of direct services, especially tourism.

For Rostow [5], any society goes logically through five stages, any different sequence from which, he states, will lead

to misfunctioning of the economy. The five stages are:

- Traditional Stage:

The traditional stage is recognizable by a very high proportion of the work-force in agriculture, coupled with very little mobility or social change, great divisions of wealth and decentralized political power. The exceptions to the pattern of emergence from the traditional state, are those countries which Rostow describes as being born free such as the United States of America and Great Britain.

- Transitional Stage:

The transitional stage is the stage between the feudalism and "take-off." At this stage the levels of investments should increase by at least 10% of national income to ensure self-sustaining growth.

The mainstream of investments should be oriented to transport and other overhead capital to build up society's infrastructure. On the social front, a new elite must emerge to fabric the industrial society, and it must supersede in authority the land-based elite of the traditional society. Surplus product must be channeled by the new elite from agriculture to industry. The length of the transition phase depends on the speed with which local talent, energy and resources are devoted to modernization and the over-throw of the old order.

- Take-Off Stage:

At this stage, the characteristics are sometimes very

difficult to distinguish from the characteristics of the transition stage. Since the preconditions of take-off stage have been met in the transitional stage, the take-off stage growth becomes self-sustaining. Also important is the establishment of what Rostow calls the "leading growth sector." Rostow argues that historically, domestic finance for take-off has two sources: first, diversion of part of the product of agriculture by land reforms or other means; second, from enterprising landlords voluntarily ploughing back rents into commerce and industry.

In practice, the development of major export industries has sometimes lead to take-off permitting substantial capital imports. Rostow argues that any industry can play the role of leading sector in the take-off stage if four conditions are met:

- that the market for the product should be expanding fast to provide a firm basis for the growth of output
- that the sector has an adequate and continual supply of capital from ploughed-back profits
- that the leading sector generates secondary expansion
- that new production functions can be continually introduced into the sector so they can increase productivity.

Rostow emphasizes that there is no one single pattern of sequence. The preconditions are necessary for take-off, otherwise, it will be abortive.

- Maturity Stage:

This stage is defined as being a period in which society has effectively applied the range of modern technology to the bulk of its resources. In this period new leading sectors replace the old. Development of the steel

industry is one of the symbols of maturity. There is also change in the distribution of the work force, growth of an urban population, switch in industrial leaderships from the entrepreneur to the manager. Rostow indicates that the stage is characterized by important political features. Political choices have to be made by society on the use to which greater wealth should be put. Should it be devoted to high mass consumption, the building of a welfare state, or to imperialist ends?

- Mass Consumption Stage:

Every nation will presumably reach the stage of high mass consumption whatever the balance of choices at the stage of maturity. Rostow points out that the less developed countries have no likelihood of reaching this stage in the foreseeable future.

Rostow's development policy is to go from one stage to another. Society needs some means which are:

1) Open the international exchange, which will allow the rise of the rate of investment
2) Utilization of the market which facilitates the growth linkages in the economy, and also the appearance of different propensities as: propensity to accept innovations, propensity to apply sciences in the economic framework, propensity to create and consume.

2.1.3 Third Conception. Underdevelopment is very often referred to

as a sociological phenomenon. This includes all the theories which try to explain underdevelopment by social backwardness and to define development policy as based on motivation.

This sociological approach is led mainly by economists who encountered difficulties in their attempts to explain underdevelopment through an economic analysis, rather than professional sociologists. This conception emphasizes its focus on sociological aspect such as: values, motivation and social institutions. The existence of such characteristics is considered as a barrier or obstacles to a society to solve its economical problems. Myrit, Meier, and Baldwin [8], define backward societies as those which were unfortunate in their attempts to dominate the environment. They justify their positions by the following:

- Lack of professional mobility.
- Lack of professional specialization
- Social structure which rejects any attempts of the rationalization of the production
- Certain number of morale and religious values-scales which do not aim toward a productive effort.

Analyzing the backward societies, Leibenstein suggests some encouraging attitudes for emerging:

- Incitation to develop the entrepreneur initiative
- Willingness to ensure the entrepreneur risks
- Search for performing industrial works
- Research and development of technologies

Hozelitz [9], contrasts developed societies and underdeveloped

societies by three symptoms which represent a certain synthesis comparatively to the previous analyses.

1) The developed societies are characterized by the domination of Universalism, which means that the individual participates socially in numerous activities. On the other hand, Particularism dominates the backward societies, in such a way that each individual acts for himself.
2) In the advanced societies, the promotions and efforts would be evaluated as function of results, in the retarded economies, this will be done on inherited or mystic bases.
3) Developed societies are characterized by well specified activities, well specialized individuals, well allocation of resources, while the backward economies are characterized by general inefficiency and mismanagement.

Hozelitz does not analyze the genesis of underdevelopment. His analysis is insufficient because the symptoms considered are based on existing structures, which they are supposed to explain. The result of any policy based on this sociological approach will aim to the reproduction of the world system, where will coexist both developed countries and underdeveloped countries. Such a situation will be unfavorable to the developing countries, and will enlarge the gap between the advanced societies and retarded societies.

This conception tries to show us that development can emerge from the mentalities, rather than structural changes, and also tries to define the development by the non-development.

2.1.4 Fourth Conception. Underdevelopment is defined by the existence of vicious circles by certain economists. This conception does not limit itself to a list of criterion or general analysis about backward societies like the previous definition, but the authors of this approach try to link, and show the interactions between the different variables.

- Notion of Vicious Circles of Underdevelopment:

The theorists of this conception of underdevelopment try to show the different obstacles (barriers) the underdeveloped economies face today. The demonstration of such notion has double aspects:

- It shows that underdeveloped economies are static, with very low accumulation level.
- It shows that every time a favorable factor of development appears, there is unfavorable factor which will reduce its impact.

The economists of this approach distinguish the three following vicious circles:

Vicious circle of the capital formation - The underdeveloped economies are characterized by insufficient capital. The consequence of this is that low incomes are distributed among the population. This results in low consumption and low savings. If poor countries cannot augment their stocks of capital because of their poverty, and if their inability to raise capital is the cause of their poverty, we would expect their poverty to persist into perpetuity. The low level of consumption will reduce the amount of

inflows and the low saving will rise the investment costs. So the level of capital will be maintained at its lower level. The following diagram illustrates this aspect.

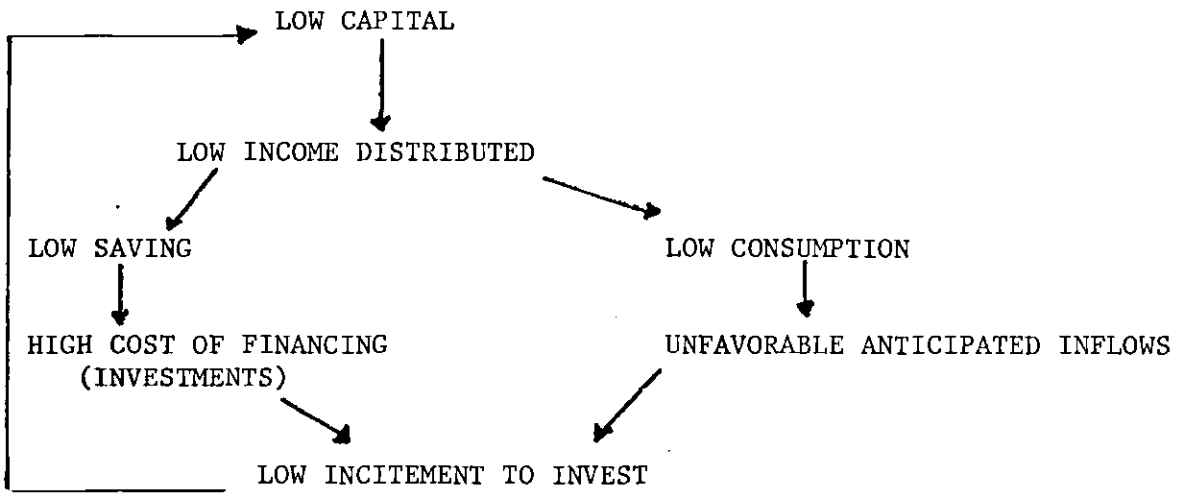

Figure 2. The Vicious Circle of the Capital Formation

The vicious circle of the population - This aspect shows that the pressure of the population growth in the underdeveloped countries is very significant. The revenues are fixed to the level of subsistence, and each time a rise in the product per capita appears, which would permit to launch a saving process of capital formation, it ends with an increase of the population as an absorbent of the surplus. This demographic pressure is characterized by:

- Low level of revenues
- If a surplus appears, it is quickly absorbed by the rise of the population

These two aspects define the vicious circle represented in Figure 3.

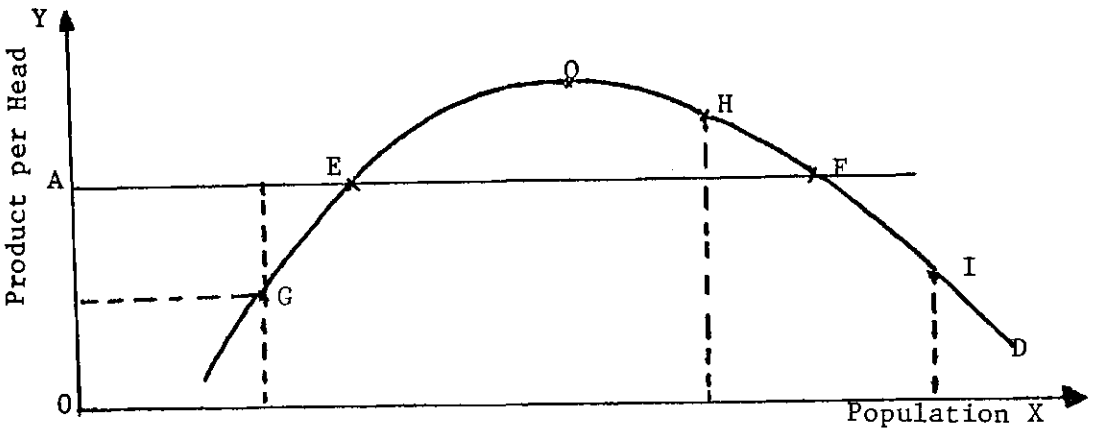

Figure 3. The Vicious Circle of the Population

AB represents the subsistence wage, OX represents the population, CD shows the product per head. The slope of the curve CD reflects the law of diminishing returns.

- The economy should necessarily tend to the point F, which is considered as a stable equilibrium. If it tends to the point E then the economy will be under a decreasing cumulative process.
- At point G, the product per head is lower than the subsistence wage, there is a population decrease, so the path will tend to the left.
- At point H, we have a product per capita which is higher than the subsistence wage, there is a population increase, so there is a displacement towards the right.

The ideal system is to maintain the population at the level of point 0 for an appropriate demographic policy, because the

surplus per capita generated is at its maximum level. In this case we can notice that:

- The stable equilibrium is found at the point F, equilibrium which does not generate any surplus and which corresponds to the stationary state
- If any rise of product intervenes, rise which is supposed to launch the growth, there is always a permanent population change which brings back the system to its initial position

The vicious circle of international trade - The terms of trade between the developed economies and developing economies are deteriorating to the benefit of the former. From the international trade point of view, the developing countries through the production oriented to exports are contributing to a substantial transfer of gains from their economies. So this phenomenon is detrimental to developing countries, and the inequality of exchange will become bigger.

The preoccupations of most of the economists in this area is related to the following questions:

- Can the vicious circles be broken?
- What sort of relationships must we assume in order to believe that the vicious circle can be broken?

2.1.5 Fifth Conception. The last conception of underdevelopment is referred as Dualism by Furtado and A. Hirschman [10]. They define underdevelopment as a coexistence of two sectors: Modern and Traditional sector. In order for development to be achieved, the

modern sector, which can absorb and bring new methods of productions and distribution into the traditional sector, is needed. The dualistic character is well described by Lewis [20], saying, "We find a few industries highly capitalized, such as mining or electric power, chemical plant, side by side with the most primitive techniques, a few high class shops, surrounded by masses of old style traders, a few highly capitalized plantation, surrounded by a sea of peasants."

For Furtado [11][12], the development can be achieved through the expansion of the modern sector if these two following conditions hold:

- Increase of the product in the modern sector compared to the total product.
- Increase of the population employed in the modern sector

For both Furtado and Hirschman, two types of processes can allow the accomplishment of these conditions:

- Industrialization
- International trade

The emphasis will be centered on the first process. Industrialization is considered as a dynamic process, which generates accumulation of the capital and utilization of labor in the traditional sector.

- Industrialization:
    1) Increases the capital allocation per quantity of factor utilized
    2) Improves the quality of factors and also increases the sources of profits
    3) Creates the demand, meanwhile trying to satisfy it

The industrialization process in the developing countries can be

justified by the following:

The underdeveloped regions have been mainly producers of raw materials and they have observed that there is a strong and positive connection between the wealth and standard of living of country and the extent of its industrialization. They also see that prices of raw materials fluctuate much more than prices of manufactured goods. Therefore, an economy which is dependent on exports of one or a few basic commodities suffers from instability of the national income more than economies which are industrialized and more self-sufficient.

2.2 Theoretical Aspects of Economic Integration

In the economic literature, the concept of economic integration is surrounded by ambiguity. It does not have clear meaning. The controversy surrounding this concept is related to the inclusion of social processes, and equalization of factor prices regarded as a condition for such integration.

In recent years, statesmen and economists have become convinced that developing countries should cooperate. Cooperation gradually engenders closer economic collaboration, and leads to closer political ties and contributes to eliminate political tensions and potential conflicts.

From the theoretical point of view, there is still confusion about integration process, because there is no economic theory explaining and analyzing the integration schemes. Much has been written on economic integration in its various forms: Free Trade, Customs Unions, Common Market, and Economic Integration.

Free Trade Arrangements - Trade barriers are abolished between the

countries joining the agreement. Each member country applies its original tariff and quota system for countries non-member of the agreement. This Free Trade Arrangements is considered as a means of self-sustaining and accelerating economic growth of the member countries.

Custom Unions - Is defined as an association of group of countries governed by an agreement to remove all restrictions on trade from member countries while establishing common external tariffs on imports from non-member countries.

Common Market - In addition to the aspects of free trade and custom union, the common market is characterized by free movement of factors of production: capital, labor, enterprise (examples of European Common Market).

Economic Union - The Economic Union is the highest type and degree of economic integration. In the framework of this scheme, the countries agree to integrate all their economic activity and to create supranational authorities to undertake joint decions for economic policy.

2.2.1 Definitions. Through the literature survey, the following definitions retained the attention.

- Gunnar Myrdal,, defines integration as "a social and economic process destroying barriers, both social and economic, between the participants of economic activities" [13]. He wrote that "the economy is not integrated, unless all avenues are open to everybody and the renumerations paid for productive services are equal, regardless of racial, social, and cultural differences" [13].

- Franz Hartog, defines integration as a rather advanced type of cooperation, so distinct from the term harmonization, which refers to a mutual consultation on important issues of economic policy [14]. Robert Mayolin, aruges that" any process which brings about a greater degree of unity can be called integration" [15]. Jan Tinbergen, considered integration as "the creation of the most desirable structure of international economy, removing artificial hindrances to the optimal operation and introducing deliberately all desirable elements of coordination or unification" [16].

- Erich Schneider, contrasts the "case of watertight isolation with that of total integration and regards all intermediate forms between these two extreme positions as varying degrees of economic integration" [17].

- B. Balassa, defines economic integration as "a process and as a state of affairs. As a process, it encompasses measures designed to abolish discrimination between economic belonging to different national states. Viewed as a state of affairs, it can be represented by the absence of various forms of discrimination between national economies" [18].

The integration doctrine elevates to the multinational plane the thesis that economic development is impossible without industrialization. According to this thesis, the sustained growth of an underdeveloped economy depends on the degree to which an active process of substitution of imports by domestic production can be promoted, so as to extend the country's capacity to import to cover the acquisition of an optimum volume of capital goods and technology.

2.2.2 Integration Programs for Developing Countries. Among the criteria that scholars of advanced countries prescribe for the underdeveloped countries integration, the following are of interest:

- The essence of integration consists of the freeing of regional trade.
- Allow a complete freedom of movement of all production factors.
- Market forces should be left at liberty, so that they may determine the new allocation of production factors on the basis of comparative advantages.
- The common tariffs of any union should not disturb the structure of existing economic relations with the rest of the world.
- Any action tending to limit competitive forces would increase the emergence of monopolistic situations.

In practice, the application of the doctrine summarized above felt under certain circumstances to generate the expected outcomes.

2.2.3 Different Approaches to Economic Integration. The Multisectoral Approach - This approach is desirable for countries which can integrate many sectors at a time. The factors which can encourage such an approach can be justified by feasibility studies on the present stage of the sectors to integrate.

The Sector-By-Sector Approach - This approach suggests that the Maghreb countries can achieve their integration by integrating sector by sector which can generate more linkages in the three economies. Sectoral approach can give priority to industry or agriculture.

The Project-By-Project Approach - the case of project-by-project approach is characterized by joint venture in the exploitation

of a single project: textile, electrical, mechanical, chemical...

2.2.4 Lessons From Experience. The question that presents itself therefore is the extent to which the Maghreb countries can learn from, and apply the lessons from other regions. Particularly, to what extent, for example, does European and Latin Amerian experience become applicable to the Maghreb countries? These later countries are characterized by:

- Underdeveloped and competitive economies rather than complementary economies.
- Intra-area trade is small and growing smoothly
- Problem of creation of a strong industrial base
- Problem of location of industries and their distribution

Present trends and theories of regional economic integration in Europe, Latin America, and Africa, cannot be explained by just taking into account the viewpoint of an economic anlaysis. Cultural, social, and political factors are also very significant. In the next section, some aspects concerning the economic integration mostly based on industrialization processes in Latin America and East African Common Market will be presented. The choice of these countries is based on the similar characteristics of their economies, which are underdeveloped, like the Maghreb countries.

- Latin American Experience:

At the end of the second world war, the Latin American countries were characterized by

o Inflationary trends

o Dependence on tropical and primary goods price

o Growing imbalance of payment

- o Low level of productivity
- o Dictatorial powers

The idea of Latin American integration was motivated by:

- o The outstanding success of the European Economic Community
- o The desire to preserve their existing trade
- o The desire to promote new trade
- o The need for increased efficiency and productivity
- o The need for larger market area

2.2.4.1 The Latin American Free Trade Association (LAFTA). In 1960, the LAFTA was created through the Treaty of Montevideo. The association grouped eleven countries with an approximate population of 250 million in 1960. Objectives of the LAFTA countries were:

- Expansion of national markets to regional market
- Gradual elimination of trade barriers within the member countries
- Achieve complementary and integration of their national economies
- Integration of single industries through complementarity

The LAFTA countries are characterized by some disparities and imbalance among the members. The causes for this situation can be attributed to many factors such as: different levels of economy, different strategies of economic development, heterogeneous production and costs structures, and different rates of inflation.

Argentina, Brazil, and Mexico attracted more investments and gained from the trade. Chile, Colombia, Peru, Venezuela were referred as intermediate countries. They have shown unfavorable trade flux. Bolivia, Ecuador, Paraguay, and Uruguay received more attention because of their critical economic situations. They were given special

concessions so they could catch up with the other countries. All the objectives of the LAFTA countries could not be met because of the serious problems on Tariff concessions. Table 1 illustrates the discrpancies of Corporate Tax Rates in the LAFTA countries.

2.2.4.2 The Andean Common Market. In May 1969, the Agreement of Cartegena was signed by Colombia, Ecuador, Peru, Bolivia, Chile and Venezuela. The Andean Common Market (ANCOM) was formalized in February 1973 in Lima. The creation of this Common market was justified by the fear of these countries to become economic satellites of Brazil, Argentina, and Mexico within the LAFTA countries.

Reasons for its creation:

- Savings and investments did not respond adequately to the needs of the region
- The market of each country was very small
- Income distribution highly unbalanced between the rural and urban regions
- The industrialization for individual country is very costly
- High costs of production and very high prices

Objectives of the ANCOM:

- Schedule all the different steps of the integration
- Channeling the different resources from outside and inside the region
- Freeing trade within the area
- Promote regional industrialization process within the region and implement sectoral programs for industrial development
- Promote the agricultural sector to generate more linkages

Table 1. Discrepancies of Corporate Tax Rates in the Lafta Countries

COUNTRY	MANUFACTURE'S AVE. TAX LOAD	CORPORATE INCOME TAX RATE	EXCESS PROFITS TAX	DIVIDEND TAX	BRANCH'S TAX RATE	DEPRECIATION	CAPITAL TAX	SALES TAX
ARGENTINA	50.8%	38%	None	9.2% upon declaration of dividend	44%	5.2% Machinery 10% Equipment 20% Tools	1.5%	7-10%
BRAZIL	46.8%	30.8%	None	7% upon declaration pland 25% witholding	30.8%	10% capital equipment 20% vehicles	None	10-30%
CHILE	53.8%	30%	None	37.5% withholding	20% + 37.5% addition	5-20% Machinery 15-30% Tools 10% -Autos	None	6-10%
COLOMBIA	43.1%	12-36%	20-56% on excess of 30% of assets	12% withholding	12-36%	5% buildings 10% property 20% vehicles	None	None
ECUADOR	27.5%	18%, Max of 30% on retained earning	None	35% withholding	18%	10% machinery 1.5%-3.75% buildings	0.16%	1-3%
MEXICO	47.9%	5-42%	None	15-20%	5-42%	5% building 10% machinery 2% equipment	None	3-5%
PARAGUAY	25%	19-25%	None	None	19-25%	5-20%	None	None
PERU	53.4%	5-35%	None	26% w.h. 36% share	5-35%	2-5% buildings 5-10% machinery 2-30% vehicles	1%	4-8%
URUGUAY	25.5%	10%	25-65%net income 30-50% capital	20% w.h.	20%	Useful life	1%	10-15%
VENEZUELA	22.8%	5%	1--45%	None	5%	Not Fixed	None	1-3%

Source: Derived from South American Economic Review, Publications, 1974-76.

The ANCOM has within its organization a sectoral program of industrial development. Each sector contains its own procedures for trade liberalization. It does not grant permanent monopoly rights because the objective is to abolish trade barriers. The industrial plants are allocated with regard to the comparative advantages, based on feasibility analysis. Inports from countries not assigned to produce a given product are subject to duties.

The Andean Market has an important branch within his organization called Economic Policy Harmonization. The purpose of this branch is multiple, since it coordinates the legislation on foreign investments in the area, defines the basic structure for a uniform Andean tariffs, controls unfair trade, promotes industrial legislation.

The new economic structure attracted many foreign investors in the area. However each country has the right to reserve certain sectors of the economy for its national investors, and foreign investments are not accepted in areas already taken by national companies. National investors in the ANCOM are subject to the same rule when investing in other countries that are members of the agreement. The Andean Development Corporation, referred as CAF (Corporation Andina de Formento), was established to finance the industrial development of the region.

Problems Encountered in the Integration Process - The problems that Latin American countries are encountering in their process of integration are very numerous. The most critical aspects are structural, financial and administrative. The structural aspects is characterized by the economic diversities and disparties among the countries in the integration process with regard to the size, physical characteristics,

levels of incomes, their respective present stage of development. Communications and transportation are also associated to the structural problem. The financial problem is represented by the lack of capital and growing inflation. Financing different industrial projects for the area is very costly. The integration process requires material resources and monetary commitments. Institutional and executive shortcomings are very critical. The weaknesses in the administrative area have slowed the integration process. More coordination and implementation of machinery of planning are needed.

The Andean countries are facing problems of balanced growth with regard to the industrial and agricultural sector. The industrial development was deterimental to the agricultural sector which sector was given less priority. High costs of certain inputs in the member countries have created more conflicts on the competitive market. Some other problems are:

- The delay in reaching agreement on the integration concepts.
- The failure to adopt the Andean decisions because of divergences of views concerning the strategies, and failure to implement them.
- The non-compliance with the trade liberalization aspects adds more complexity to the problems encountered.

Despite all these current problems, the integration process is consolidating more and more. The Andean Pact will continue and will be maintained as a strategic organization by the member countries in their economical and political bargaining.

2.2.4.3 Eastern African Common Market. The Eastern African Common Market is composed of Kenya, Uganda, and Tanzania. The idea of integration was initiated during the British occupation of the three countries. In 1945 a special commission for East Africa was created. Its purpose was to regulate the community services for taxes and custom duties. In 1951, when the three countries got their independence, the commission became the East Africa Service Community and Organization (EASCO). In 1965, the member states decided to re-think the integration scheme. For this, they studied the results (advantages and disadvantages) of the past experience. The study showed Kenya with an increased and privileged position in the industrial and commerical sectors. After two years of studies and analysis of the past experience, a special commission headed by experts of the United Nations proposed a new treaty of cooperation. In December 1967, the Treaty of East African Cooperation came into force.

The main objective of the community is to enforce and regulate the industrial activities, commercial and others, between the members of the community. This will help to reach an accelerated and harmonious development and a new expansion of economic activities with a fair repartition of the benefits.

Principles of the Treaty

- Common external tariff, common excise duties, freedom of intra-community trade except in the short run for agriculture, and except for temporary restriction in the interest of industrial balanced development.
- Regulation in intra-common market trade, by means of transfer

of taxes not by quantitative restrictions.

- Regulation in the location of industrial projects within the common market with regard to the protection of domestic industry through development bank.
- Allocation of customs and excise and income taxes revenues on the bases of derivation, with no fiscal redistribution within the partner states.

The high authority commission of the community is composed of the three heads of states. The community also has five executive commissions: Common Market, Planning, Communication, Research and Social Affairs.

Main objectives of the community - The main objectives of the community are more emphasized on the coordination and the harmonization of industrial development plans in the following areas: Iron and Steel, Mechanical and Electrical engineering, chemical, fertilizers, and petroleum industries, textiles, pulp and paper, agro-allied industries. The other areas are transport, monetary, planning etc...

Problems encountered by the community - The major issue of the community is on the external tariffs. There are no tariffs levied on trade between the countries. Tariffs and taxes were kept at the same level in each country. But there was no general harmonization of economic policy, no concerted and deliberate attempt to influence and control the operation of the market mechanism.

From the industrial development aspect, market mechanism worked to the advantage of Kenya, because it attracted large investments. So this situation widened the gap between the three countries. To rehabilitate this situation, the three countries decided to:

- o Arrange a shift in the territorial distribution of production by a number of firms which operated in two or more of the countries
- o Institute quotas on inter-territorial trade
- o Increase sales from country in deficit in inter-territorial trade to a country in surplus
- o Devise a system of inducements and allocations of industry to secure an equitable distribution of industrial development between the three countries.

The community also has some other common problems:

- o Tendency to reduce the role of agriculture
- o Very poor and low domestic market
- o Need for industrial planning in the area

Studying the East African common market structure, the Danish economist, Ingrid Detter Doinie wrote "The community is one of the most interesting organization with regard to its modern legislation and economy, but the community concentrates too much power." The lack of dynamism in the community in the recent years, is justified by some political divergences and also by different types of economic models chosen by the three countries. Table 2 shows the different attempts of economic integration among developing countries.

The idea of integration, if not well studied and analyzed, can lead to disintegration. The industrialization processes in the two communities have not been accompanied by sufficient radical changes in the structure of society or in the economic structure of other sectors, to which, on the contrary, industrial growth pattern have had to be

Table 2. Regional Integration Schemes Among Developing Countries

Integration Scheme	Beginning Date	Country Memberships	Degree of Integration	Planned Date of Achievement
LATIN AMERICA:				
- Latin American Free Trade Area	1960	Argentina, Bolivia, Brazil, Chile Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay, Venezuela	Free Trade Area	1973
- Andean Subregional Group	1969	Bolivia, Chile, Colombia, Ecuador, Peru, Venezuela	Common Market	1980
- Central American Common Market	1961	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua	Common Market	1966
- Caribbean Free Trade Association	1968	Antigua, Barbados, Guyana, Jamaica, Trinidad and Tobago, West Indies Associated States	Free Trade Area	1973-78
AFRICA:				
- East African Economic Community	1967	Kenya, Uganda, Tanzania	Common Market	1967
- Central African Customs and Economic Union	1966	Central African Rep, Gabon Congo (Brazzaville), Cameron	Common Market	Indefinite

Source: Franklin R. Root, International Trade and Investment: Theory, Policy, Enterprise; South-Western Publishing Co., Cincinnati, Ohio, 1973.

adopted. This is because the industrialization process was motivated less by internal factors than by the impact of external events. The development of industry, from the economic, cultural, and technological standpoints, has been equally dependent upon foreign influence. The industrial development is not only expected to broaden the expansion of production capacity but also to broaden the perspective of the social and cultural change.

CHAPTER III

INDUSTRIAL TRENDS ANALYSIS IN THE MAGHREB COUNTRIES

3.1 Algerian Strategy of Industrialization

To achieve her strategy of development, Algeria has based her policy of industrialization on heavy industry. Algeria's drive to industrialize rapidly and fulfill her goal of self-sufficiency by 1980 was motivated by the following:

- o Political realization that true national sovereignty could be achieved only on an independent material base, and
- o The economic reality that alternative means of production would have to be ready before Algeria's natural resources were exhausted.

The strategy based on heavy industry is considered as the starting point for industrial installations capable of providing the basis production for any industrial transformation.

The industrialization strategy can be achieved by the development of:

- o Steal production, which is regarded as the basis for mechanical, electrical, and metallic industries, and also as source for the fabrication of equipment (capital) goods which will contribute to the accomplishment of all industrial investments.
- o Non-ferrous transformation, which at short term will be necessary for the enlargement of the mechanical and electrical industries in more elaborated forms.

- o Building materials, on which depend all the dynamic development strategy.
- o Fertilizers production, strategic input for the agricultural development.
- o Basic chemical products, which are necessary for the industries of transformation.

The industrialization process in Algeria has essentially encompassed the simultaneous and integrated development of four sectors: petroleum and gas, other mining, energy, and manufacturing.

The main objective in the manufacturing sector has been to absorb and process the country's natural resources, taking into account external economies and the inherent linkages between various activities. For example, the iron and steel industry, which relies on domestic iron ore deposits, provides the basic steel input for the development of the petrochemical, mechanical, and electrical industries. The chemical and power industry utilize the country's petroleum, natural gas, and phosphate deposits. Processed food industries are based on the country's agricultural products. Capital goods and other industrial inputs, have received greater emphasis than consumer goods.

3.1.1 Analysis of Different Plans of Development

The main objective of the Three Year Plan (1967-69) was to launch the bases for industrialization structures to be followed by the 1970-73 Four Year Plan. So this global seven year reflected the strategy of development chosen by Algeria, which is based on industrialization. The main goals of this plan were the following:

1) Produce locally all the basic and strategic products needed by the

economy, such as hydrocarbons, steel, electricity, fertilizers and cement.

2) Develop the mechanical and electrical machinery sectors.

3) Become self-sufficient in textiles, leather, food, chemicals and parachemicals.

4) Systematic process of domestic natural resources.

The policy of economic development was revealed in the choices of priorities expressed during the pre-plan scheme (1967-69). During that period 9,124 million AD were invested, and 4,750 million AD have been invested in the industry while only 1,606 million AD were oriented to agriculture, 704 million AD to education.

The distribution of the industrial investments has been as follows:

Hydrocarbons and Steel Industry	1,093 million dollars
Electricity and Gas	95,6 million dollars
Foodstuffs	51,5 million dollars
Textile and Leather	40,5 million dollars

The objectives of the 1970-73 Four Year Plan were as follows:

1) Raise the standard of living and absorb unemployed workers.

2) Generalize primary education.

3) Ensure economic independence.

4) Reduce inequalities in income distribution.

This Four-Year Plan was committed to provide the basic requirements of energy and heavy industry needed for the development of intermediary productive sectors. The development of these later sectors is necessary to satisfy all the current consumer needs of the

population, and also to achieve the greatest capitalization of the country's natural resources. The keystone of this Four-Year Plan was the installation of the heavy industrializing industry. The total investment during this period was 5.5 billion dollars (1970 exchange rate) of which 45% went to the heavy industry.

The goals of the 1970-73 plan were: to sustain and augment growth to 9%, substitute domestic production of inports as much as possible, provide more jobs. The main objective of the manufacturing sector has been to increase production, and establish more basic industries of transformation. Sizable investments have flown into the chemical and power industry to increase domestic transformation of natural gas and phosphates. A large processed food industry has been established, based on the development of agriculture. In addition to basic machine tools, equipment goods, and intermediate goods, Algeria has developed several interrelated industries: iron and steel, mechanical and electrical, and chemical and construction goods industries.

More than 40% of the Gross Domestic Product (GDP) in 1972 was accounted for by the industrial sector and hydrocarbons alone accounted for about 20%. This rate of growth was generated by the Algerian policy of steadily increasing production: 52 million tons of oil and 8 billion cubic meters of natural gas were produced in 1972, for a total value of 700 million dollars.. The increase of the total amount invested during the four year plan was 8.3 billion dollars at the 1973 exchange rate. In 1972 exports increased by 50% and imports increased by 30% over those of 1971.

In the Four Year Plan (1974-77) the approximate 27.5 billion dollars economic plan which emerged for the period 1974-77 gave industry a larger share (43.5%) of total projected investment than any other sector, with oil and gas development alone accounting for nearly 18%. So the main priority continues to be industrialization. The goals of the plan are to maintain an average economic growth rate of 10% per year, create 450,000 new non-agricultural jobs, and increase the standard of living by increasing personal consumption 11% per year.

The objectives of the plan are very ambitious: GDP is to increase by more than 50% from 1974 to 1977. In 1976, GDP topped 15 billion dollars or 945 dollars per capita, by 1980 the GDP will stand at around 20 billion dollars. Industrial production projection will provide 65% of GDP in 1980, and will be triple the volume of industrial production in 1970. Table 3 shows the increase of industrial production in unit of output. The main sources of this increase will be: petroleum earnings, rising production and exports of natural gas, and continued heavy public investments and economic expansion. In 1976, 30.4% of GDP was composed of natural gas and petroleum share. Tables 4 and 5 gives a clear picture of industrial investments during the two periods of the plans. This shows the industrial trend of the Algerian economy, and the share of each branch.

3.1.2 Natural Resources Survey

Algerian economic growth and industrial expansion depend heavily on the hydrocarbon sector as a source of funds and raw materials. It represents 84% of the country's exports, 30% of Algeria's GDP. Algeria is well endowed with natural resources.

Table 3. Industrial Production Increases (In Units of Output)

	1969	1973	1972	1980
HYDROCARBONS				
Crude Oil (mill met. tons)	42.7	60.9	72.0	80.0
Natural Gas (mill cu. met)	3.2	9.3	25.0	42.0
Mining (mill met. tons)	3.6	4.8	5.7	12.2
Steel (mill met. tons)	.2	1.3	3.2	5.4
Electricity (mill kilowatts)	1.5	2.9	4.6	6.5
MECHANICAL & ELECTRICAL INDUSTIES (mill met. tons)				
Carpentry, boilers & Coffee	.027	.068	.113	.14
Motors, Tractors, Vehicles,	6,300	28,350	116,000	161,100
Pumps, Electric Lamps	-	-	9,000	17,000
Chemical Industries	.061	.7	1.33	1.82
Construction Materials				
Cement, Pre-fab, Plateglass	.94	1.28	3.38	4.39
Bricks, Rooftiles	.53	.89	-	-
FOODSTUFFS (mill met. tons)				
Flour, Semolina	.81	1.13	1.35	1.7
Sugar	.01	.21	.23	.24
Refined Oils	.07	.09	-	-
CONSUMER GOODS				
Cotton, other Fabrics (mill sq. yds.)	63.0	132.0	-	-
Leather Shoes (mill pairs)	9.0	19.0	-	-
Paper Pulp (mill met. tons)	.02	.07	-	-
Fruit and Legume Cans (10^3 tons)	32	55	-	-

Source: Ministry of Economy and Planning, Algiers, 1973.

Table 4. Planned Investment by Sector (In Millions of Dollars)

Sector	1970 - 1973 Total Investment	1970 - 1973 % of Total	1974 - 77 Total Investment	1974 - 77 % of Total	% of Increase Over First Plan
Industry	4,369	53.6	12,000	43.5	174.7
Agriculture, Fisheries	1,235	15.1	4,190	15.2	239.3
Irrigation	(325)	4.0	(150)	0.5	53.8
Infrastructure	697	8.6	3,880	14.1	446.7
Social Services	719	8.8	3,653	13.3	408.1
Education	738	9.1	2,487	9.0	237.0
Tourism	173	2.1	375	1.4	116.2
Administration	172	2.1	369	1.3	108.7
Other	51	0.9	630	2.3	1,135.3
TOTAL	8,154	100.0	27,574	100.0	238.2

Source: Derived from an analysis of the investments of the two four-year plan (1970-73 and 1974077).

Table 5. Planned Investment In Industrial Sector 1974-77 (In Millions of Dollars)

	Amount	% of Total
Hydrocarbons	4,875	40.6
Mining	275	2.3
Electricity	381	3.1
Iron Smelting	1,466	12.3
Electrical and Mechanical Construction	1,559	13.0
Chemicals	1,000	8.3
Construction Materials	1.025	8.6
Food Industries	267	3.0
Textiles	355	3.0
Leathers	43	0.4
Wood, Paper, and Miscellaneous	416	3.5
Local Industries and Handicrafts	228	1.9
General Studies	10	-
TOTAL	12,000	100.0

Source: Ministry of Economy and Planning, Algiers, 1974.

o Natural Gas - Algerian natural gas is not combined with petroleum, free of sulfur, easy to handle and cheap. It is also adaptable to petrochemical transformation and liquefaction. Table 6 shows the algerian potential in the field of natural gas. Algerian reserves of natural gas according to the recent estimates are over 3.6 trillion cubic meters, or around 10% of the world's known reserves (see Table 6). By the year 1980, Algeria will be the world leading exporter of natural gas, selling abroad some 81 billion cubic meters/year. Some 70 billion cubic meters/year of natural gas will be liquified for shipping. This will represent 80% of the projected world trade in liquified natural gas (LNG). Table 7 shows the natural gas exports projects. The production of natural gas was projected to increase from 3.7 billion cubic meters in 1969 to 7.8 billion cubic meters in 1973. Any further increase from the production rate of 1973 will be limited by the pipelines capacities.

o Petroleum - The estimated reserves of the Algerian petroleum are from 2 billion to 6 billion tons, and some 700 million are recoverable in the present stage of technology. Using recovery methods now under development, such as gas reinjection and processes of water injection, SONATRACH is expecting to recover 5% or more in addition to the present recovery. Petroleum production reached 51.2 million tons in 1973. In 1971, the transport capacity was the limiting factor for further expansion of petroluem output. Algeria's petroleum reserves represent

Table 6. Algeria: Natural Gas Reserves Billion (Thousand Million) Cubic Meters

PROVEN RESERVES		
Hassi R'Mel		2,000
El Biod Region		375
Illizi Basin		50
Ahnet, Timmoun, Reggane Regions		375
	TOTAL	2,800
SEMI-PROVEN RESERVES		800
PROBABLE RESERVES		2,900
POSSIBLE RESERVES		600
	TOTAL RESERVES	7,100

Source: Ministry of Industry, Statistical Publication, 1974

Table 7. Algerian Natural Gas Export Projects

Export Terminal	Import Terminal	Importer	Qty/billion Cu. Met(year)	Start-up	Duration (Years)	Original FOB Price (US Cents/Million BTU)
LNG						
Arzew 1	Canvey Island (GB)	British Gas	1.0	1964	15	52
Arzew 1	Le Havre (FR)	Gas De France	0.5	1965	15	56
Arzew 1 or Skikda	Boston (USA)	Distrigas	0.5	1971	20	40
Skikda	Fos (FR)	Gas De France	3.5	1972	15	36.6
Skikda	Spain	Gas Natural	1.0	1974	20	46
Skikda	Boston (USA)	Distrigas	1.2	1975	20	46
Arzew 2	Cove Point (USA)	El Paso	10.0	1976	25	30.5
Arzew 2	Savannah (USA)	El Paso	10.0	1976	25	42
Arzew 2 and Skikda	USA	Eascogas	6.0	1975/6	22	46
Arzew 2 and Skikda	Barcelona (SP)	Enagas	4.5	-	20	65
Bethioua	Fos (FR) Monfalcone (IT)	European Consortium	15.5	1972/8	20	56.5
Bethioua	Wilhemshaven (GER)	Ruhrgas (Consortium)	10-12	1978/9	20	65
PIPELINE						
Hassi R'Mel	La Spezia (IT)	ENI	11.5	1978	25	-

Sources: The Petroleum Economist, February 1975, Sonatrach Data.

approximately 7% of world reserves and almost 122 years of the 1973 rate of production. Only 2 million tons are diverted to domestic consumption, and 5 million tons of refined products were produced in 1973.

o Non-ferrous Minerals - The non-petroleum minerals are mainly composed of iron, phosphate, rock, coal, zinc, and lead construction, iron pyrites, mercury. SONAREM is the government company controlling the country's non hydrocarbon mineral output. The non-petroleum minerals will continue to have importance as exports but on secondary basis. The primary function is to provide raw materials for the growing industrial plants.

Non-Petroleum Minerals	1960	1970	1973
Iron			
Ouenza	3.4 million/T	2.9M/T	3.7M/T
Garadjebilet	-	-	2 billion ton deposits
Phosphate Rock	560,000 T	520,000T	Djebel Onk, 500M/T deposits
Coal	120,000 T	17,000T	Kenadza, to make coke for the growing steel complex
Zinc & Lead	60,000T	-	120,000T - Project Building
	20,000T	-	30,000T - a zinc flotation plant of 70,000T and an electrolysis plant

3.1.3 Existing Industrial Plants:

Refining And Petrochemicals: Refining and petrochemical industry is expanding on the major coastal terminal points for Algeria's crude petroleum and natural gas pipelines. The strategy chosen for the development of petrochemicals industries is based on profitability and earning capacity in foreign exchange. Algeria can be expected to maintain increasing output of fertilizers, based on indigenous resources of phosphate, oil and gas. The key industrial sectors are controlled in their totality by national companies. These industrial complexes developed will be capable of producing ethane, propane, butane, and other derivatives in addition to the methane for the liquefied natural gas. The industrial plants include ethylene, polyethylene, chloric-alkali, and vinyl chloride units as well as a desalination unit and a sea water pumping station. The objective is to concentrate on the production of chemical products, including fertilizers, plastics, butadiene, synthetic rubber, and aromatics, that will contribute to the growth of the agricultural and other industrial sectors and that can be exported competitively because of the quality and low costs of the ingredients. The table 8 illustrates the finished and the projected plants related to the petrochemical industry. The investment allocation in this area totalled I billion Dollars during the 1974-77 plan. The demand for fertilizers kept increasing because of the modernization of agriculture.

Manufacturing Industries: Algeria has included light industry as the second priority in its industrial development policy. This will improve the economic integration, as an overall national development pattern and create more linkages in the economy. Algeria has developed

Table 8. Petro-Chemical Plants (Projects)

Plants		Capacity
Algiers Refinery		2.7 million T/years
Hassi Messaoud Refinery		200,000 T/Day
Arzew Refinery		2.5 million T/years
Skikda Refinery		7.5 million T/years
Arzew Nitrogenous Fertilizer Plant		
	Amoniac.....	100 Tons/Day
	Urea	400 Tons/Day
	Nitric Acid	400 Tons/Day
Phosphate Fertilizers Plant at Annaba		
	Fertilizers	550,000 T/year
	Sulfuric Acid.....	450,000 T/year
	Phosphuric Acid.....	175,000 T/year
Setif Plastic Plants (2)		-
Arzew Methanol Plant		100,000 T/year
Skikda Plastic Plant		
Skikda Liquefaction Plant		4.5 billion m^3/years
	Polyrinyl Chloride	
	Polyethylene	
	Synethtic Fibers	
	Plastics	
Arzew Gas Liquefaction Plant		10 billion m^3/years
Camel Gas Liquefaction Plant		1.2 billion m^3/years
Two units of GPL Extraction at Hassi-Messhoud		
Unit of GPL "Separation and Condensat"at Arzew		
Unit of GPL Separation at Skikda.		

several interrelated industries like mechanical and electrical.

The most important state companies are: Societe Nationale De Siderurgie (SNS), Societe de la Construction Mechanique (SONACOME), Societe Nationale de l'Electronique (SONELEC).

SONACOME, in the field of mechanical construction, manufactures tractors, diesel engine, valves, motorcycles, bicycles, trucks, passenger vehicles, and agricultural machinery and equipment.

SONELEC, in the field of electrical and electronic industries, plans to build electrical machinery and an electronic complex to manufacture components in the field and to assemble consumer and industrial plants.

SNS, controls all the iron and steel industry, and the EL-HADJAR plant is the heart of this industry. The plant is composed of steel making section which produces 430,000 tons/year, rolling mills section producing 625,000 tons of "coil" per year, and rolling mills section producing 600,000 tons of cold rolled/year. The plant is expected to extend its steel work from 450,000 tons to 2 million tons/year. Table 9 illustrates the evolution of the demand for the steel products. During the 1974-77 plan. over 1.6 billion dollars, or 13% of the total public investment have been channeled into manufacturing industries (mechanical and electrical). Production trends in the light industry have been favorable as the following figures show it: Tractors 4,000/year, Diesel engines 9,500/year, Vehicle assembly plant 4,550/year (9,000/year by 1980), Motorcycles 30,000/year, Bicycles 15,000/year, Small motors 5,000/year, Car project plant 100,000/year, Isolated electrical cables 4,239 tons (1971), Telephonic cables 1,014 tons, Wires and cables 6,191 tons.

In addition to these main industries, light industry consists of

Table 9. Demand Evolution For The Steel Products
(Tons)

Sectors	1968	%	1973	%
Mechanical Industries	20,000	6.6	90,000	12.8
Petroleum Sector (Transportation Rate)	141,000	4.7	140,000	20.0
Buildings and Public Works	100,000	33	230,000	32.8
Agriculture	10,000	3.3	130,000	18.6
Other Sectors	39,000	10.1	110,000	15.8
TOTAL	300,000	100%	700,000	100%

Source: SNS, Statistical publication, Algiers, 1973.

the production of foodstuffs, beverages, tobacco products, textiles and clothing goods, pharmaceuticals, and household and light durable consumer goods (see Table 5). Table 3 also gives some projections of the output of these industrial products. Numerous new plants are now under construction; e.g. yarn plant (2,000 tons/year), shoe factory (4 million pairs).

The industrial sector in the Algerian economy includes the production, transportation and transformation of hydrocarbons (petroleum and natural gas); the production of non-hydrocarbon minerals; the production of energy (electricity, industrial and household use of natural gas); manufacturing; and construction and public works. In the industrial trend analysis, the emphasis was on the most important branches (petroleum, natural gas, non-petroleum, manufacturing industries) which can greatly influence industries of the Maghreb countries.

Algerian industrial development was characterized in the 1970's by heavy industry. It included the production and processing of hydrocarbons, petrochemical production and transformation (fertilizers, plastics), and iron and steel production and capital goods made from them. It also included other mechanical and electrical producers goods; such as cement, plywood, and paperboard products, and the assembly of transport vehicles.

3.2 Moroccan Strategy of Industrialization

In 1970, output in the agricultural sector accounted for about 27% of Morocco's Gross Domestic Product, and provided employment for 65% of the population. The remainder of the GDP was provided by non-government services 11%, electricity 3%, mining 5%, and construction and public work 5%.

In spite of sizeable mineral deposits, increasing industrial output, and a rapidly growing tourist trade, the development of agriculture resources remained the key factor in the country's plans for development. The industrial sector includes: energy, mining, manufacturing (handcrafts). The modern sector is more efficient than the traditional sector, its reliance on protected markets had tended to reduce its effectiveness below that of its potential competitors in other countries.

Manufacturing industries are centered on light industries such as food processing, textiles, light metal products, construction materials and assembly of machines and vehicles using imported parts. In the mining field, phosphate represents the biggest share as a foreign exchange earner. Moroccan industry is very diversified.

- The semi-manufactured goods or equipment were limited because of the non-existence of heavy industry.
- Textile industry meets about 30% of local demands.
- In the processing industries after food processing, there is textile, chemicals and pharmaceuticals, building materials, leather, oil.

A substantial part of the country's industrial needs is still based on imports. These imports are characterized by cotton, artificial fibers, oilseeds, spare parts for the mechanical and engineering industries.

Moroccan economy is characterized by its mixed economy, where the private ownership is estimated to 60% in the industry. There are some sectors in which the enterprise can be wholly owned by the foreign investor, but most business enterprises do require 50% Moroccan ownership.

3.2.1 Analysis Of Different Plans Of Development

The analysis of different plans of development before 1973, shows that the strategy of development was centered on the following objectives:

Establish the basic facilities and manufacturing to substitute for imports, and make maximum use of domestic raw materials, and create jobs.

Reform the system of land tenure and methods of cultivation.

Promote domestic savings and foreign private investments.

Develop educational and vocational training facilities.

The three year plan 1965-67, was more a stabilization program. It concentrated more on agricultural than industrialization aspects. But the industrial sector generated an expansion which contributed to the realization of the growth rate target of 3.5%. In the three year plan 1968-72, the priority was given to the development of light industries for domestic consumption, and also processing of products from agriculture, fishing, mineral resources. During the course of this plan, mining, fuel and power increased by 32% and manufacturing by 14%. The investment expenditures reached 4 billion dollars. The Table 10 illustrates the Moroccan industrial production indices.

Five-Year Plan 1973-77:

The total investment to execute the 1973-77 five-year plan totalled 6.6 billion dollars. The objective was to produce an average real growth rate of 7.5% per annum. Shortfall in private capital investments forced the government to revise its investment expenditures to 5.9 billion dollars. The shortfall was due to a substantial decline in mining output of 25% in the sector of phosphates because of the sales fluctuations (international market). Some other sectors of the economy registered some improvements: manufacturing 9%, construction and public works 58%, fuel and power 9%.

In 1974, Morocco became a 2 billion import market, an expansion of 1.1 billion dollars in a two year period, taking into account the rising cost of raw materials, machinery and equipment. In 1976 the

Table 10. Moroccan Indices of Industrial Production
1965 - 1969 (1958 = 100)

Industries	1965	1966	1967	1968	1969
Fuel and Power	153	162	165	181	144
Mining	126	123	124	123	131
Metallurgy	103	102	114	124	136
Construction Material	139	145	145	168	186
Chemicals and	134	152	154	170	174
Fats and oils	125	130	136	140	121
Foodstuffs (not canning)	127	138	144	136	141
Textiles	181	190	196	224	267
Leather	100	104	96	112	121
Paper and Paper Products	133	143	147	157	178
Miscellaneous	116	125	133	128	137
General Index	133	134	138	142	152

Source: Banque Marocaine du Commerce Exterieur , 1969.

Moroccan budget shows a deficit of 2.2 billion dollars. So external sources are expected to be found to finance the construction of: a million ton iron and steel mill, pulp and paper plant, equipment for a phosphate port, installation of lead and copper founderies.

3.2.2 Natural Resources Survey: Mineral resource reserves, except for phosphate, are very modest. This can be viewed as a constraint or limitation for any ambitious industrial development.

Phosphates: Are the dominant mineral activity in Morocco, and they represent the important source of foreign earnings. Phosphate production for the years 1970 to 1973 represented approximately 70% of the mining output value. With reserves estimated at 40 billion metric tons, Morocco is the largest producer of phosphates rock in the world, providing 30% of the world market. In 1974, the Cherifian Office of Phosphates (COP) produced an output of 19.7 million tons of phosphate rock. The production of this mineral kept increasing because of the installation of modern equipment. During the period 1968-72, the COP invested 145 million dollars for modernization and expansion. Expansion of phosphate mining has a high priority in the Moroccan strategy of development.

Petroleum: Despite continuous exploration, no sizable petroleum deposits have been found. The Bureau de Recherche et de Participation Minieres (BRPM) in collaboration with foreign companies, is providing 80% of the cost of exploration and promising a share 50-50 to private investors on the bases of discoveries of commercial quantities of oil. The existing refineries are using imported crude oil to satisfy the domestic demand. Natural gas output rose from 43.6 million cubic meters in 1974 to 59 million cubic meters in 1974. The natural gas reserves are estimated between

Table 11. Morocco: Production of Selected Minerals 1968 - 70 (In Metric Tons)

	1968	1969	1970
Barite	78,160	86,940	84,750
Coal Anthracite	451,000	397,000	433,000
Cobalt	15,179	14,655	6,039
Copper Gel	9,521	9,416	12,183
Gas produced (100 meters)	10,821	42,012	43,589
Iron	809,458	742,142	872,000
Lead Ore	120,636	116,989	120,911
Manganese, Chemical	73,451	120,132	112,376
Manganese, Metallurgical	86,437	10,504	-
Mineral Waters	6,000	11,091	10,814
Petroleum crude	88,638	52,630	44,060
Phosphate Rock	10,512,000	11,294,000	11,400,000
Pyrrhotite	417,851	391,523	291,041
Rock Salt	40,540	66,720	70,000
Zinc	67,620	71,161	31,871

Sources: Banque Marocaine du Commerce Exterieur, 1969, and Division des Mines, Ministere du Commerce.

400 million cubic meters.

Coal: The reserves of anthracite coal are estimated at 100 million tons. In 1974, 574,000 metric tons were produced, and some 70,000 tons were exported to Algeria and Italy. However, coal mining is facing serious problems: difficult and costly to exploit unless the scale of production increases, low labor productivity. The production is

generally used for the production of electricity, cement, and phosphates.

Iron Ore: Reserves are estimated at 50 million tons. Deposits mined by open pit methods were expected to run in 1971. Some other 25 million metric tons not high grade ore are available by going underground. The production rate decreased from 522,000 metric tons in 1970 to 324,000 metric tons in 1974.

Other Minerals: At the end of 1960's the country was an internationally significant exporter of cobalt and manganese. The cobalt reserves were estimated at 800,000 tons of ore with 1.5% cobalt content. The metallurgical manganese production ceased in 1969. Lead is Morocco's second leading mineral export. Silver comes entirely from the processing of lead ores. Zinc deposits are near exhaustion. Table 11 shows recent production trends of Morocco's principal minerals.

3.2.3 Existing Industrial Plants:

Refining and Petrochemical

SAFI Chemical Complex: Costs 50 million dollars, produces 450,000 tons of pyrrhotite, 600,000 tons of phosphates, 200,000 tons of triple phosphates, 150,000 tons of diammonium phosphates. The two last productions are used as fertilizers for exports, since only 60,000 tons are consumed domestically.

Calcination Plant, and Drying/Dry Enrichment Plant: with an annual capacity of 420,000 tons.

SAFI Plant: will produce phosphoric acid and non-ammonium phosphate. Its output capacity will be 1 million tons per year.

SIDI Kacem Refinery and Mohammedia Refinery: produce respectively 330,000 tons per annum and 1.3 million tons per annum. An amount of 37.5 million dollars project is under execution to double the capacities of the two refineries.

OUED-EL HEIMER Foundry: produced 24,900 tons of lead metal and 21.2 tons of silvers in 1970.

NADOR Plant: A 26 million dollars pelletization plant, with production capacity of 850,000 tons of pellets, and 800,000 tons of pyrites per year. This plant will supplement the 40 existing founderies and metal working plants scattered around the country.

SIDI YAHIA CHEMICAL Plant: Produces 4000 tons of chloric, 4800 tons of soda per annum. The rubber plant produces shoes, tires, industrial rubber.

Six Factories: Manufacturing paints and varnishes, some other three plants produce pesticides and disinfectants.

Plastic Industry: Is becoming important, and also is encouraged because of its low investment ratios. This industry produces the following items: plastic bottles, plastic packages, plates, dishes, pipes, etc...

Other Plants:

Metal Working and Machinery: This sector of the industry produces a variety of products: iron, aluminum, steel, metal cans, containers, electric cables and wires, etc... Machinery products include assembled factory of automobile, trucks, motorcycles, bicycles, agricultural machinery, rail-road equipment. The Table 12 illustrates Moroccan selected manufacture productions (1968-70).

Table 12. Moroccan Production of Selected Manufactures

Product	Unit	1968	1969	1970	% of Change 1969/1970
Construction Material					
Brick-Tiles-Pipe	M.T.	119,530	125,670	150,853	+ 20.0
Refractory Bricks	M.T.	7,845	8,775	8,875	+ 1.1
Cement	M.T.	1,011,000	1,165,000	1,404,700	+ 20.2
Absorbs Products	M.T.	24,370	24,801	30,100	+ 21.4
Cement Blocks	M.T.	67,027	70,060	-	-
Metal Working					
Soft Lead	M.T.	24,167	26,832	-	-
Wire and Nails	M.T.	10,467	10,431	-	-
Cast Iron	M.T.	7,051	8.033	-	-
Uninsulated Wire conductors	Kilos.	17,747	18,879	-	-
Metal Construction material	M.T.	17,474	21,357	-	-
Agricultural machinery	M.T.	2,704	2,413	-	-
Household Hardware	M.T.	4,275	4,436	-	-
Metal Furniture	M.T.	1,190	1,261	-	-
Metal Containers	M.T.	27,264	27,282	-	-
Metal Beds	M.T.	2,035	1,885	-	-
Utility Vehicles	M.T.	3,485	5,020	5,414	+ 7.3
Passenger Cars	M.T.	12,533	18,162	19,989	+ 9.1
Chemical Products					
Sulfuric Acid	M.T.	30,279	27,823	28,280	+ 1.6
Superphosphates	M.T.	253,018	281,538	179,697	-36.2
Fertilizers	M.T.	110,953	77,534	73,551	- 5.1
Rubber, industrial	M.T.	2,647	2,689	2,741	+19.3
Matches (Millions of boxes of 50)		391	403	408	+ 1.2
Bottled Gas	$1000m^3$	1,841	1,980	2,282	+15.3
Explosives	M.T.	4,285	3,787	4,585	+21.1
Paints & Varnishes	M.T.	8,252	9,714	11,219	+15.3
Pneumatic Tubes	1000	308	363	458	+13.2
Textiles					
Jute, Sacks & Cloth	M.T.	5,270	5,421	5,868	+ 8.2

Table 12 cont'd

Products	Unit	1968	1969	1970	% of Change 1969/1970
Cotton Yarn	M.T.	10,074	10,959	14,533	+32.6
Cotton Cloth	M.T.	10,711	13,037	12,018	- 7.2
Wool Yarn	M.T.	1,743	2,004	2,084	+ 4.0
Wool Cloth	M.T.	793	1,005	1,084	+ 7.9
Rayon and Synthetics	M.T.	2,204	2,954	3,160	+ 7.0
Vegetable Oils					
Raw vegetable oil	M.T.	17,152	13,352	13,983	+ 4.7
Refined Vegetable Oil	M.T.	59,258	50,376	53,574	+ 6.3
Margarine	M.T.	810	752	866	+15.2
Soup	M.T.	29,472	27,593	28,751	+ 4.3
Candles	M.T.	4,785	4,668	5,372	+15.1
Food and Tobacco Products					
Flour	M.T.	667,218	625,426	818,245	+ 30.8
Coscous & Noodles	M.T.	17,944	3,712	9,973	+168.8
Refined Sugar	M.T.	485,452	408,979	398,900	+ 2.5
Carbonated Soft Drinks	Hect.	352,194	407,275	407,143	+ 14.7
Tobacco	M.T.	5,594	5,805	6,222	+ 7.1
Paper and Cardboard					
Pulp	M.T.	38,832	42,267	44,226	+ 4.6
Paper and Cardboard products	M.T.	43,927	55,200	54,800	+ 0.7
Paper, processed	M.T.	8,736	9,072	10,483	+ 15.6
Leather					
Tanned Leather	M.T.	447	478	771	+61.3
Dressed Skins	1000sq.ft.	22,980	26,997	22,684	-16.0
Leather Shoes	1000 pairs	1,818	1,782	1,696	- 4.8
Other Industries					
Glassware	M.T.	10,958	13,000	17,178	+32.1
Plywood & Veneer	Cu. Meters	7,843	10,344	13,055	+26.2
Vegetable Fibers	M.T.	85,000	70,000	-	-

Source: Banque Marocaine du Commerce Exterieur, 1969 Le Maroc en Chiffre, 1970.

Construction Materials: This sector is composed of 30 plants to meet the local demand and also provide a surplus of cement destined for exports. In 1970, Moroccan cement output totalled 1,402,000 tons, bricks totalled an output of 150,853 metric tons.

Processing Industries: The bulk of Morocco's industrial production is still derived from the food and textile industries. Principal products include refined sugar, flour, canned vegetables and fruit, fruit juice, vegetable oils, wine and tobacco. In 1970, six sugar beet refineries (110 million dollars) were operating, and their projected production by 1980 will reach 480,000 tons. Morocco has approximately 46 factories, which produce 21,000 tons of canned fruit and jam annually, 27 vegetable canneries whose production 14,000 tons of tomatoes, six citrus fruit factories producing 27,500 tons of grapefruit and orange juice yearly. Olive and olive oil productions are very important. In 1970-71, 220,000 tons of olive were produced. Textile production is one of the most fastest growing Moroccan industries. The cotton textile industry consists of seven spinning mills, 20 cloth mills, and ten factories specializing in finished cotton cloth. The Table 10 gives the textile output.

Despite types of domestic productions had to be supplemented by imports from abroad to meet local demand, the dual nature of the Moroccan industry and the associated income disparities made it possible for increasing numbers of light industries to produce for exports. By processing local materials or imported raw materials, value added to the national product can be significantly higher. Except for phosphates, other mineral resources are modest to support an ambitious

industrialization program. The chemical and parachemical industries are encouraged by the government, and their productions include: sulfuric acid, superphosphate, sulfate, explosive, paint, pharmaceutical products.

The metal working industries are composed of wide range of activities: iron and steel castings, agricultural machinery, metal structures, refrigerators, metal furniture, ship construction, assembly of automobiles and trucks. The tourist industry is classified third in foreign exchange earnings after phosphate and fresh fruit. At mid-year 1977, Morocco continued its path on heavy capital formation-oriented strategy, but began to feel the impact of some unfavorable factors, likewise the phosphate prices which did not pick up markedly during the 1977. This situation slowed down the revenues generated by Morocco's key export earner. Also the textile sector is Morocco's leading industrial employer and largest consumer goods exporter. Morocco presents a higher agro-allied industry potential within the Meghreb countries.

3.3 Tunisian Strategy of Industrialization

Tunisian economy includes moderate natural resources, both agricultural and mineral, and diversified and expanding industry. Its imports reflect the strategy of development, which is based on capital goods to launch an expanding industrial base. The obstables to the Tunisian economic development stem from the physical structure of the country and the surrounding environment as well as social and

economic structures. Like Algeria, and Morocco, Tunisia is characterized by its dual economy. Tunisia is by no means an industrial country. The basis of industrialization is completely lacking; moreover, the prospects for rapid expansion of industry is limited. The strategy of industrial development in Tunisia is based on the concept of poles of development to ensure harmonious industrialization. The planners believe that this policy of poles will spread all over the rest of the country in the long-run. Tunisia's industrialization plan intended to affect all industries likely to be founded in the country. The question whether to plan for heavy or light industry was very critical. But the priority was given to industries which fulfill the following conditions:

Existence of a considerable demand within the country.

Existence of raw materials within the country.

Possibility of integration within existing industries.

Existence of particular advantages within the country with regard to costs of production.

To encourage the industrial development, industry sector is open to all forms of enterprises, state, private, or cooperative companies.

3.3.1 Analysis Of Different Plans Of Development: During the 1965-68 plan, the objectives were:

Reform of existing structures.

Industrialization.

Raise the standard of living.

International cooperation.

In the late 1960's and through 1971, GDP increased at an average annual rate of 4.7%, with highest growth rate achieved by tourism (28%), mining (including petroleum) 18%, and manufacturing (8%), wood working, textiles, mechanical/electrical, paper and chemical branches grew rapidly from 11% to 19% (annually). Agriculture had very poor performance (1.5% real annual growth). During the four-year plan 1968-72, about one third of the Gross Fixed Capital Formation (1.4 billion) was undertaken in the industrial sector. In 1976, the industrial sector has been affected by a decrease in the energy section (-21%), but it generated strength in manufacturing (+18.8) and construction (+22.7%). The sub-sectors of building materials, textiles, mechanical and electrical equipment each grow by more than 30%. The GDP in 1976 was breakdown as follows: Agriculture 21%, Industry 26% (mines, energy 6%, manufacturing 11%, construction 9%), services 39%, and Government 14%. The table 13 shows some key economic indicators of the Tunisian economy.

The 1973-76 plan emphasized on the dynamism of industry, especially mining, and manufacturing. The plan achieved a 6.6% real annual growth rate. The plan allocated approximately 900 million dollars to industry, which is expected to account for 35% of projected GDP increase, the bulk of new jobs creation (60%) and 43.4% of foreign exchange earning.

Industry depends heavily on investments capital from foreign suppliers, as well as some raw materials and technical assistance.

Table 13. Key Economic Indicators (In Million $)

	1974	1975	1976	1976/75%
Income and Production				
Gross Domestic Product				
At Current Prices	3496	4350	4419	1.6
At Constant 1972 Prices	2705	3240	3321	2.4
Production				
By Sector (Constant 72 Prices)				
Agriculture & Fisheries	530	593	603	2.0
Manufacturing	251	291	331	14.0
Mining	35	36	26	-27.0
Energy	104	126	100	-19.0
Construction & Public Work	163	215	239	11.0
Government Budget				
Operations	714	893	894	-
Capital	395	435	468	8.0
Gross Investment	806	1332	1359	2.0
% G.D.P	23	30.6	31	-
NATIONAL INCOME PER CAPITA	553.3	644	631.3	-

Source: Department of Commerce, O.B.R. Publication, U.S.A., 1975

The table 14 illustrates the industrial promotion for the years 1973-74.

3.3.2 Natural Resources Survey: Tunisia is endowed with very modest natural resources reserves. This represents a constraint for any ambitious industrialization process.

Table 14. Industrial Promotion In Tunisia

General Indice	1973	1974	Variation %
Electricity - Gas	139.4	158.5	+ 13.7
Quarrying Industry	102.4	105.9	+ 3.4
Manufacturing Industry	124.6	138.4	+ 11.1
General Indice	124.6	130.4	+ 8.0
Electricity			
Distilled Power/Mw			
Thermal Plant		288	
Hydraulic Plant		28.8	
		15.6	
		332.6	
Self Production		50.0	
TOTAL POWER		382.4	
Petroleum (Tons)			
El-Burma	3,468,678	2,482,178	- 28.4%
Douleb	197,320	225,899	+ 14.5%
Tanesmida	19,227	15,751	- 18.1%
Sidi Litayen	-	197,144	+ 7%
Ashtart	-	1,209,415	-
TOTAL	3,869,408	4,130,387	+ 6.7
Iron Smelting (Tons)			
Steel	1,402	1,514	8.0%
Iron Pig	2,874	2,770	- 3.6%
Paper and Pulp Industry(Tons)			
Pulp Production	22,767	22,803	+ 0.2%
Domestic Sales	5,898	12,666	+ 114.8%
Exports	16,055	10,370	- 35.4
TOTAL SALES	21,953	23,036	+ 4.9

Source: Derived from different statistical publications of Tunisia, 1974.

Phosphates: Represent one of the major export mineral. They account for 70% of total mineral production (excluding petroleum). Some 85% of the phosphates contain only 65% phosphate, and 5% to 6% are of the metallurgic kind used in blast furnaces. The production for the year 1974 was 3.8 million tons.

Petroleum and Natural Gas: As shown in the table 14, the reserves for the petroleum and natural gas are very modest, but the petroleum industry is considered as a major of foreign exchange. Petroleum production reached 86,000 barils per day, but remain very modest. The major oil deposit is located at AL-BORMA, near the Algerian border. It is exploited by mixed company Italo-Tunisienne. Important new off-shore discoveries at Ashtart increased the oil production. In 1974, the crude petroleum production reached approximately 4.2 million metric tons. New off-shore discoveries of natural gas are estimated around 50 billions cubic meters of reserves. Natural gas production in 1974 was evaluated at 1.5 billion cubic meters which were used for domestic use.

Other Minerals: For the year 1975 the following minerals registered these given output; Iron ore 814,000 tons, Seasalt 224,000 tons, Lead 20,000 tons, Zinc 15,000 tons, Fluorspar 28,000 tons, Mercury 2,900 Kg. The table 15 shows the evolution of minerals output.

3.3.3 Existing Industrial Plants:

Gabes Plants: Phosphate rock is transformed into phosphate fertilizers by Industries Chimiques Maghrebine at GABES, and also by mixed companies (NXP,SIAPE). In 1974, they produced 430,000 tons of triple superphosphate fertilizer, 130,000 tons of phosphoric acid.

Table 15. Natural Resources Output

Raw Materials	Total Resources UNITS		1970	1971	1972	1973	1974	Units
Crude Petroleum	M.T	69	4151	4096	3972	3884	4139	TH.M.T
Natural Gas	TH. M.CM	82	5	1	20	114	201	M.C.M
Iron Ore	TH.M.CM	-	422	515	485	433	431	TH.MT
Lead Ore	TH.M.CM	-	22	20.9	19.9	15.6	12.5	TH.MT
Mercury	-	-	4	12	8	4	3	MT
Zinc	-	-	11.8	11.4	11.3	9.1	6.2	TH.MT
Phosphate	-	-	2969	3162	3387	3473	3826	TH.MT

Source: United Nations Statistical Yearbook, New York, 1975

M.T = Million Metric Tons
TH.M.CM = Thousand Million Cubic Meters
TH.M.T = Thousand Metric Tons
MT = Metric Tons

Two phosphoric acid plants at GABES, have 250,000 tons total capacity.

Bizerte Plants: Iron and steel complex at Bizerte with 175,000 tons per year capacity.

Oil Refinery Plant: An oil refinery at Bizerte processes 1.1 million tons of crude petroleum annually. Its production includes also liquified gases, kerosenes, motor oil, gas oil, gasoline, and heavy oils.

Mechanical Plants: Mechanical industries include a variety of plants; vehicles assembly plant which produces 8000 cars, 1,400 trucks and buses, radiators, wire and nails, hand tools, boilers and tubes, metal structures.

Electrical/Electronic Plants: Are composed of assembly plants which produce yearly 25,000 television receivers, 40,000 radios, 15,000 aerials, and many other items like: batteries, electrical wiring, accumulators, kitchen equipment, sewing machines.

Food Industries: Are developing rapidly through plants processing domestic raw materials for export in the following areas: Fruit and vegetable canning, olives and olive oil, canned fish.

Textiles Plants: Constitute the second most important manufacturing industry after food processing. Thread and cloth producers are state agencies, but the remainder of the textile industry is private. The skill industry is confined to the traditional sector. Textile yarn and finished fabrics are manufactured by six units of the state enterprise (SOGITEX).

Power Plants: Power production has always been a handicap to development efforts. Solid fuel and hydraulic energy are insufficient to meet modern requirement. Electric power is provided by 14 thermals and 3 hydroelectric plants. In 1973, 963 million Kwh of electricity were produced. In 1975, a 57 million dollars program started to double the flow of dry gas to GABES power stations, separate condensate and liquified petroleum gas, and construct a second gas turbine station.

Table 16 , illustrates some selected industrial output of the Tunisian Economy.

3.4 Maghreb Industrial Potential

After the Maghreb countries got their independence, they started building a viable national economy, which is constrained by narrow national markets, inadequate skills, low domestic savings, and competing with African exports. Similarity of their production patterns as well as their structural rigidities inherited from the past can encourage the three countries formation for a concrete economic integration.

The Maghreb counties are endowed with abundant and diversified natural resources like: oil, natural gas, phosphates, iron, lead, zinc, and lead, and 1.5% of iron ore. They hold enormous deposits of gas (Algeria 10% of the world known reserves), as well as some coal, uranium, and copper.

The Maghreb industrial capacity is impressive compared with the rest of the African continent. Electrical power generation, principally from hydroelectric sources is already around 3.7 thousand million Kwh, and the region's oil refineries have a capacity of more than 6 million tons. The basis exists in the region for abundant and cheap energy, petrochemicals, a fertilizer industry, iron and steel, and

Table 16. Industrial Output

Products	Units	1970	1971	1972	1973	1974
Cotton Yarn	Thou. Met. Tons	5.3	5.5	9.6	9.0	-
Woven Cotton Fabrics	Million Metric	24	23	39	18	-
Tires	Thous.	101	122	115	155	-
Sulphuric Acid	Thou. Met Tons	424	464	643	732	731
Phosphate Fertilizers	Thou. Met. Tons	183.2	191.3	195.8	197.8	184.8
Petroleum Products						
Liquefied fet. Gas	Thous. Met. Tons	18	20	18	16	19
Naptha	Thous. Met. Tons	122	117	78	40	54
Motor Spirit	Thous. Met. Tons	93	100	94	86	123
Kerosene	Thous. Met. Tons	64	62	62	73	91
Jet Fuel	Thous. Met. Tons	42	41	-	-	-
Distillate Fuel Oil	Thous. Met. Tons	314	315	339	314	301
Fuel Oil	Thous. Met Tons	453	429	453	441	492
Cement	Thous. Met. Tons	547	584	627	524	540
Pig Iron	Thous. Met. Tons	125	98	143	158	145
Crude Steel	Thous. Met. Tons	100	87	132	137	132

Source: Ministry of Industry, Statistical publication of industrial output, Tunis, 1975.

other heavy industries. Morocco's phosphate represents two-third of the total Maghreb production (60% of world reserves). With an average of 10 million tons of phosphate, the Maghreb countries rank third in the world production, and first for exports.

Maghreb iron ore is of superior quality and relatively easy to mine. Three major steel centers already exist in the region with a production higher than 2 million T/year. In the processing of non-ferrous metal, the Maghreb already has large lead and zinc founderies, with capacities over than 35,000 tons, which are expected to expand. Maghreb exports of minerals account for about 42% of African total mineral exports.

In the manufacturing stage of the steel industry, we notice the rapid expansion of mechanical, and engineering industries like: wire drawing, metal frame, tool making, assembly lines, light engineering, heating appliances, iron-work, domestic appliances and hardware. Table 17 shows the industrial development change structure in the Maghreb.

Table 17: Changes In Maghreb Industrial Output By Sector(%)

Sector	1958	1968	1970
Mining and Quarrying	5.2	4.2	4.5
Petroleum	-	21.3	23.0
Agro-Allied Industry	42.0	27.5	26.0
Light Industry	38.0	26.8	25.0
Heavy Industry	15.0	20.2	21.2
TOTAL	100.0	100.0	100.0

The industrial output is substantially superior to the agricultural output. Despite the industrial growth the Maghreb economies remain dependent on agriculture. The value of mining and manufacturing

production amounts to 22 dollars per head against 15 dollars for Africa. Manufacturing production also amounts to 18 dollars per head against 11 dollar for Africa as whole. The share of manufacturing production in the total GDP represents 14% in the Maghreb region as against 11% for the African continent.

The structure of the industrial production in the Maghreb countries in the 1970's is different from that existing in the 1960's. In the early sixties, the spread effects of Maghreb countries mining industries were still very limited, since the bulk of mining output (phosphates, oil, gas) was exported without processing. So the remaining portion used as raw material for domestic manufacturing industries, was rather insignificant. The industrial potential today (1977) has changed with the growth of the chemical industries which are highly capital intensive.

The economic range for 1970 is marked by a high level of trade with the outside of the world: exports amount to 30% of the Gross Domestic Product. This is clearly due both to the Maghreb's wealth and variety of mineral resources and to the advanced development of present day agriculture, which exports 40% of the total agricultural product.

On the whole, industrialization in the Maghreb countries is largely based on the expansion of existing activities, and on the creation of production units intended to satisfy domestic demand. The difficulty lies in the fact that the sector which produces primarily for exports generates forces that are difficult to turn to the advantage of the country concerned. This is not just due to the narrowness of the market, the low level of incomes and lack of skilled labor, but also to the unfavorable reaction of developed countries possessing industries with backward and forward

linkage effects, and the competition in their established fields of supremacy. The most crucial and urgent problem of the Maghreb countries is to provide employment for its labor force. The rate of unemployment is very high.

The structure of the industrial sector is very favorable for an economic integration. The three countries have a cheap labor force, abundant raw materials, but a lack of capital and skilled labor. So the means of production do exist, and are not used or insufficiently so. Industrialization program in the Maghreb requires a heavy capital inflow. At the present stage, some industries have shown excess of industrial capacities because of the lack of demand for the product concerned. A large industrialization program in the area will affect the agricultural output. It will help to improve the quality of the agricultural product through use of fertilizers, insecticides, development and application of agro-technical know-how.

The strategy of economic development in the Maghreb countries is summarized in the Table 18, which shows the priorities of each country. Tables 19 reflects some macro-economic data and their projection by the 1980 in the Maghreb area. Figures 4-5-6 illustrate the industrial maps of the Maghreb. The maps identify the industrial poles of development of the Maghreb countries.

The Maghreb economies are essentially characterized by small markets, duplicate industries, excess industrial capacities, and large imports essentially composed of capital equipment goods. The principal priorities of their economic development are as follows: productive investments oriented towards heavy industry for Algeria, self-sustaining economy for

Tunisia, and agricultural promotion for Morocco. The economic analysis showed that the area is endowed with abundant natural resources. Algeria, with her 10% of the world reserves of natural gas and 7% of world petroleum reserves, and Morocco which provides 30% of the world market of phosphates, represent a potential input to the achievement of the industrial integration.

Table 18. Synthesis Scheme of Priorities and Projected Rate of Development in the Maghreb Countries

	ALGERIA	TUNISIA	MOROCCO
	Four Year Plan (1974-77)	Five Year Plan (1973-77)	Four Year Plan (1973-76)
Principal Priorities	Productive Investments Heavy Industry	Self Development starting 1974	Agriculture
Some Projected Annual rates of Growth	GDP 9% Agriculture 3% Manufacturing Ind. 13.7% Building and Public Work 22.5%	GDP 6% Agriculture 3% Phosphates 40% Demographic Aspect 2.3%	GDP 5% Agriculture 3% Construction 9.5%
General Objectives	Build Socialist Economy Build an Economical Independence Rise the standard of living Rise the cultural level Struggle against regional disparities	Consolidate structural reforms Contribution of all the sectors Development of Trade and manufacturing industries Development of Tourism	Agricultural Development Development of Tourism Education and Training Set up a demographic policy Industrial Development Develop Savings

Source: Derived from an economic analysis of the development plans of the three countries.

Table 19. Macro-Economic Data for the Maghreb Countries (Period 1964-1980 - In Million U.S. Dollars).

	Values				% of Annual Rate of Growth			Share in GDP			
	1964	1970	1975	1980	1964-70	1970-75	1975-80	1964	1970	1975	1980
Total Population (Million)	28.90	34.10	39.60	45.90	2.70	2.90	2.80				
Resources											
GDP	5093.90	7781	10114	13622	4.90	5.40	6	100	100	100	100
Item Per Capita	236	230	262	308	2.13	2.40	3.10				
Imports	1645	2212	2953	4041	4.50	5.40	6.20	28.70	28.00	28.10	28.40
Use of Resources											
Private Consumption	4115	5124	6293	8090	4.03	4.26	4.93	69.83	66.56	63.20	59.93
Item per capita ($)	139	151	163	182	1.26	1.30	2.03				
Public Consumption	1013	1474	2079	2978	6.16	7	7.33	17.16	18.46	19.96	21.23
Gross Capital Formation	980	1435	2133	3140	5.53	7.83	8.40	18.40	18.83	20.63	22.86
Exports	1429	1960	2562	3456	5.60	5.50	5.96	23.30	24.26	24.30	24.33
Savings	806	1160	1681	2444	6.20	7.63	8.36	13.20	14.76	15.83	17.53
Industrial Origin of GDP											
Agriculture	1434	1664	1927	2235	2.50	3	3	23.60	20.96	19	16.70
Mining	577	1896	2614	3189	6.86	6.66	7.06	8.00	14	25.16	26.50
Manufacturing	678										
Construction	274	357	511	777	4.06	6.26	8.50	5.36	5.10	5.23	5.83
Energy	105	101	238	374	7.66	8.43	2.43	1.73	2.03	2.36	2.73
Services	2772	3703	4824	6505	4.90	5.36	6	48.26	48.26	48.26	48.26

Source: Derived from different publications of United Nations Economic Commission for Africa

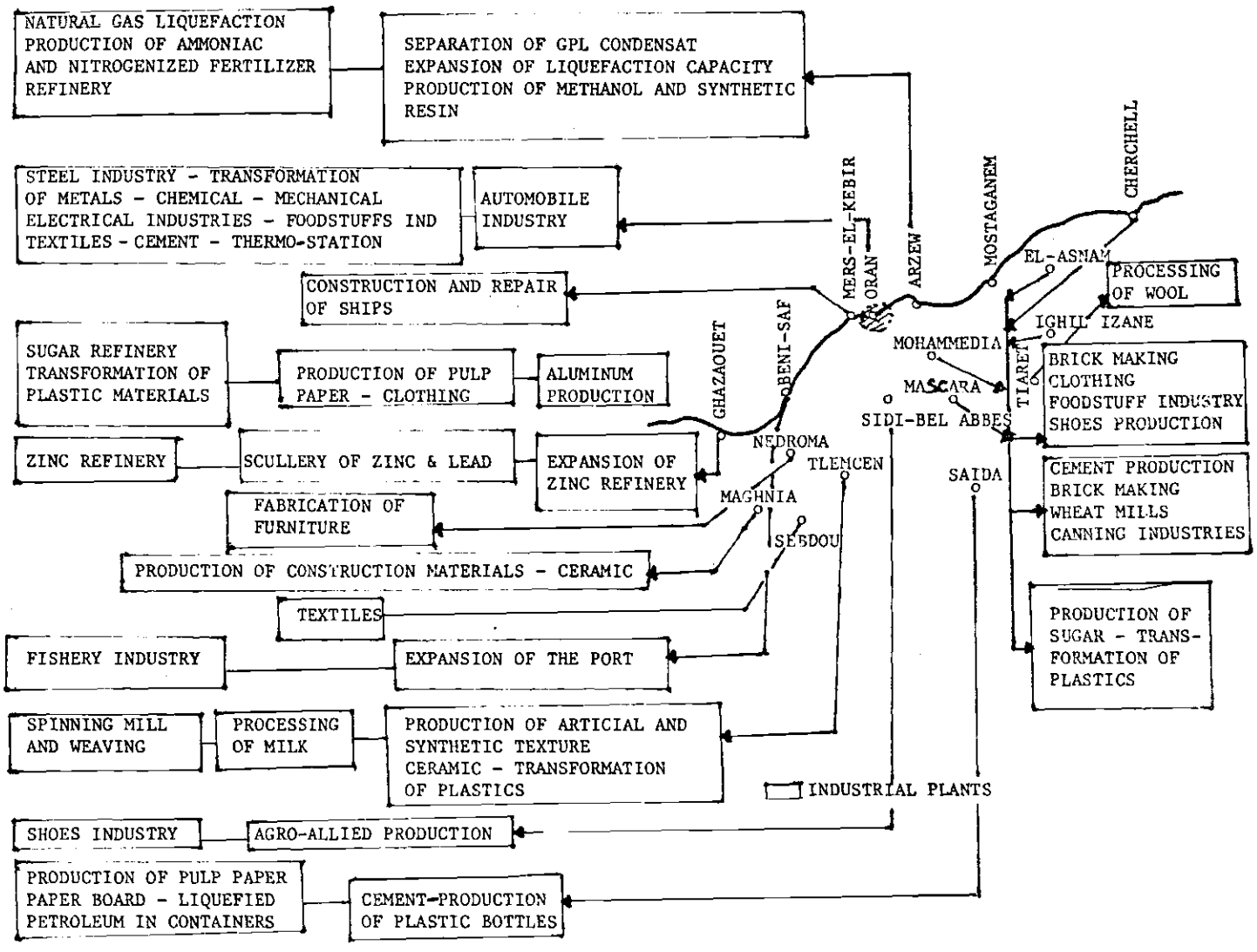

Figure 4-A. Industrial Map of the West of Algeria

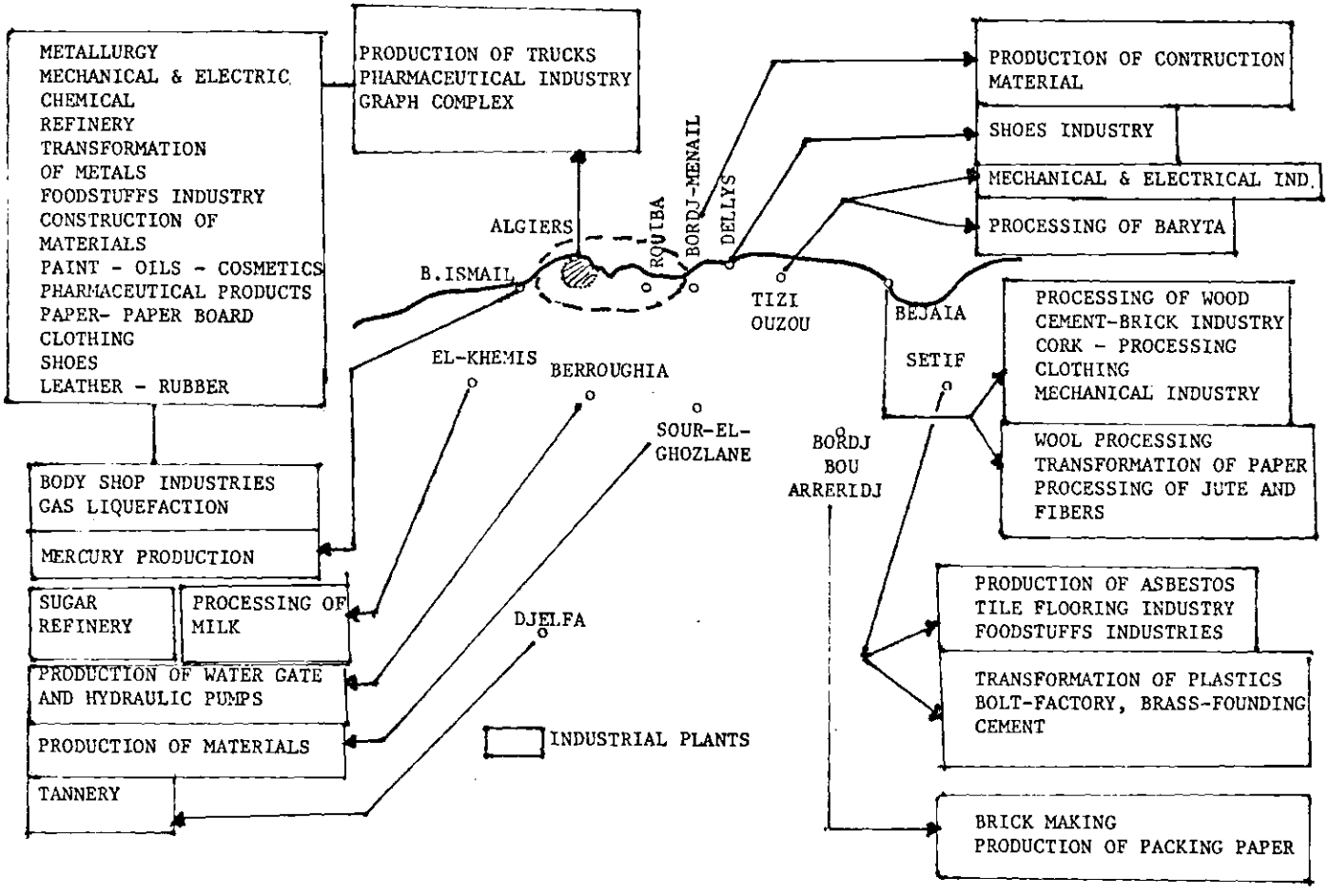

Figure 4-B. Industrial Map of Algeria Center

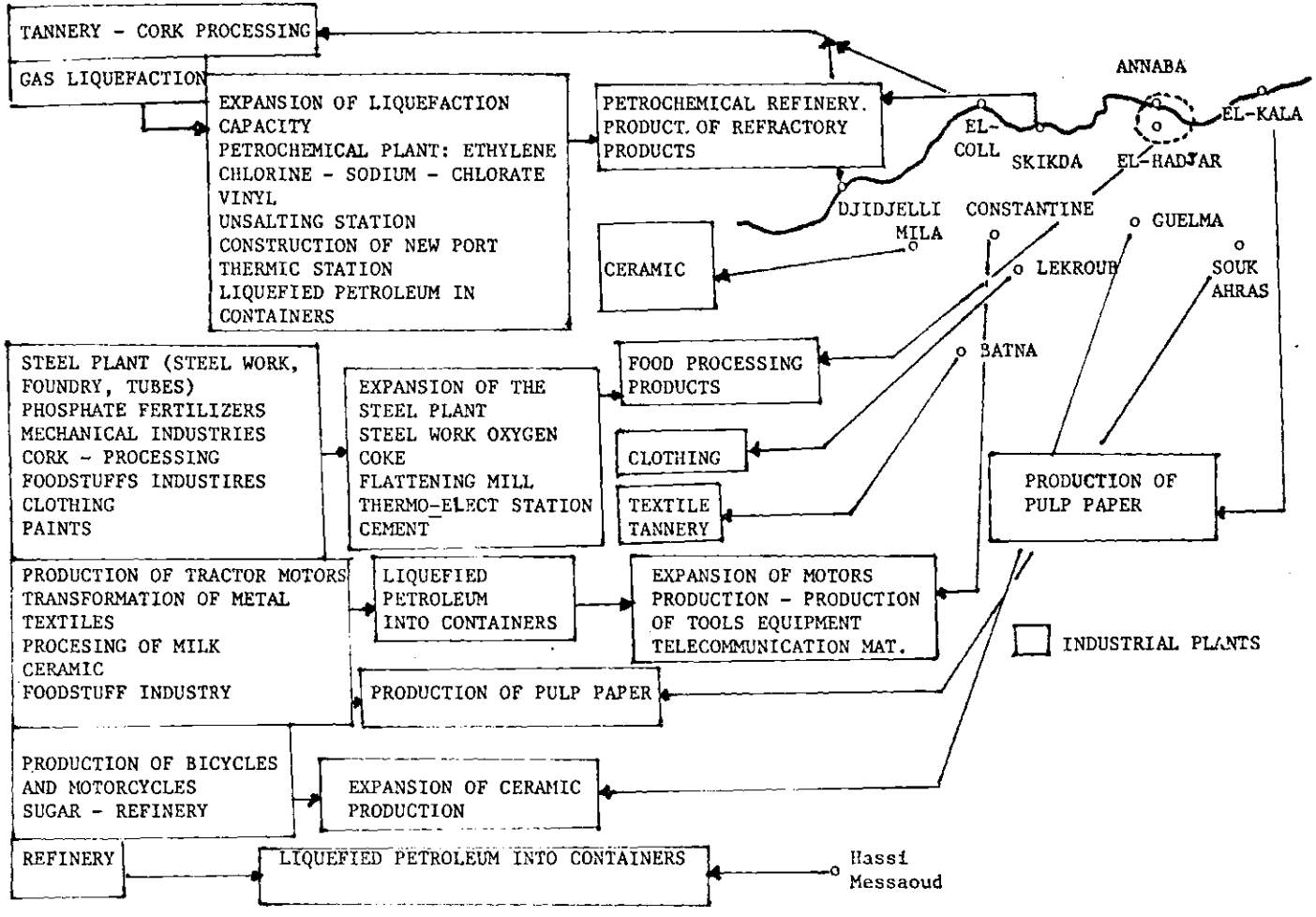

Figure 4-C Industrial Map of Algeria East

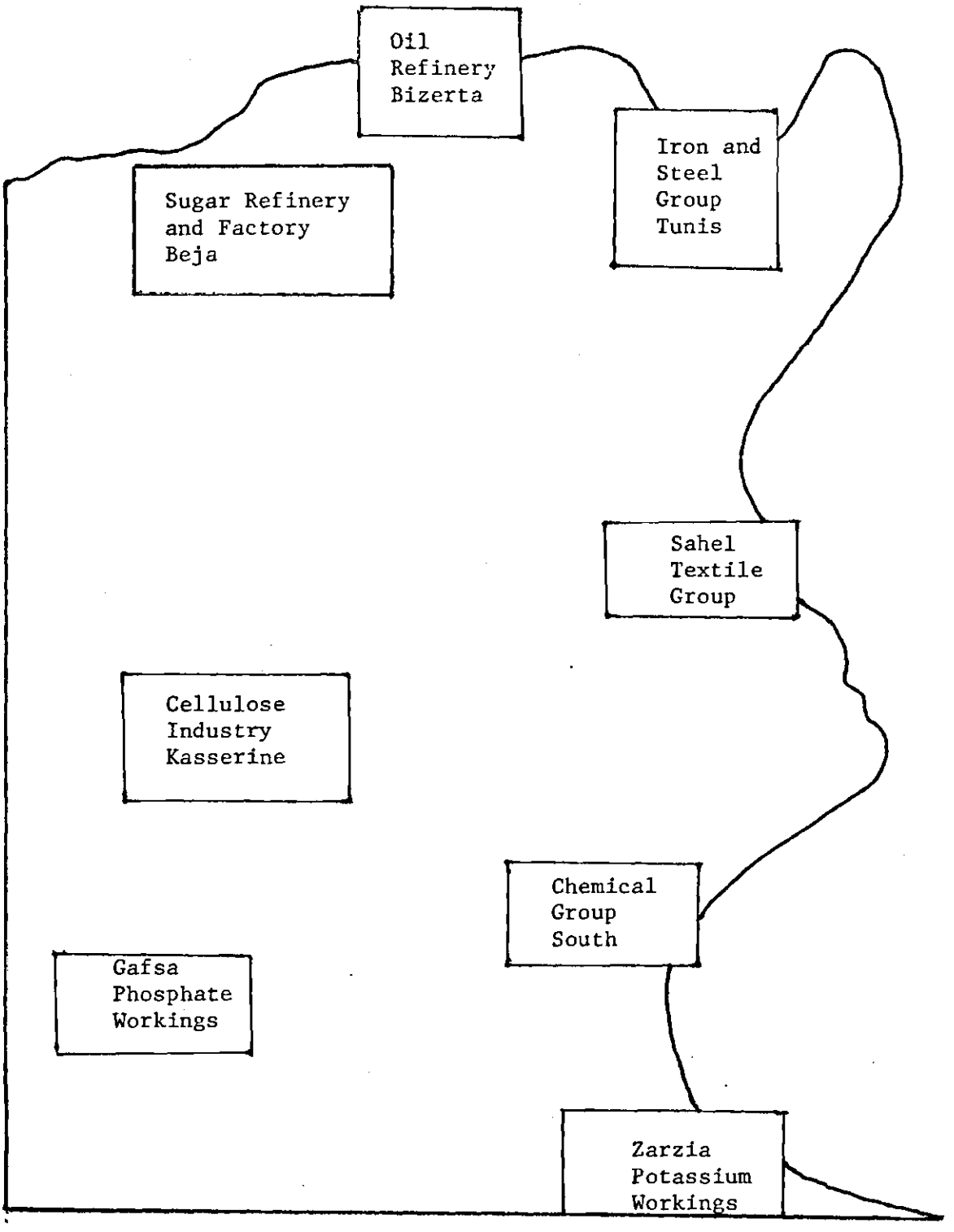

Figure 5. Map of Tunisia Industrial Poles

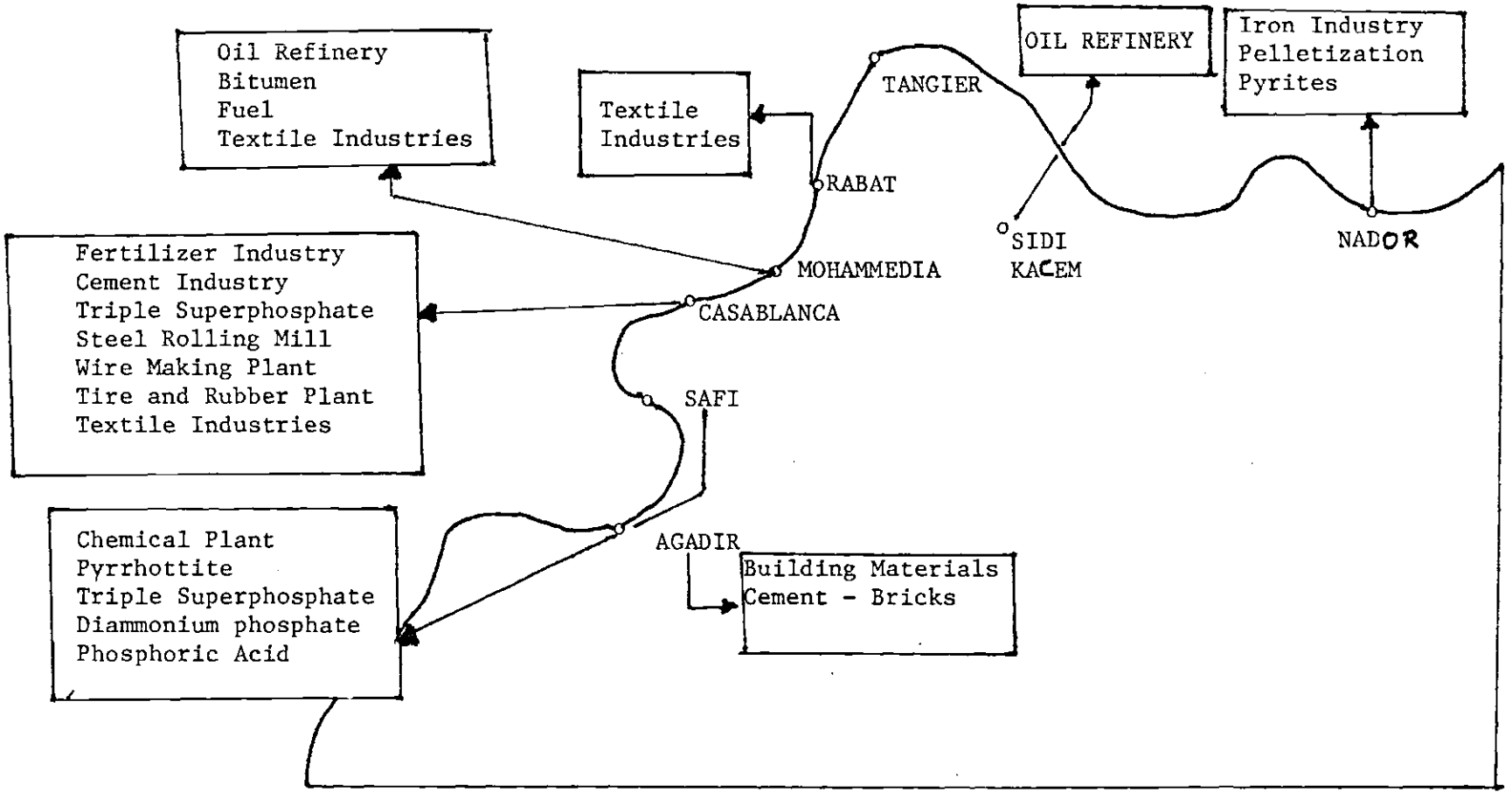

Figure 6. Moroccan Industrial Map (Important Plants)

CHAPTER IV

ECONOMIC FACTORS ANALYSIS FOR A REALISTIC INTEGRATION

Many developing countries view economic integration on a basis of political alliance rather than on objective economic analysis. This chapter will identify the economic factors for a realistic integration in the Maghreb countries. This will be done through an import-export analysis, study of the industrial market, study of the demographic aspects, and underutilization rate analysis of the existing industries.

There are several ways to identify new industrial opportunities, some of them are the following:

- o Examine the interindustry relationships
- o Study the availability of the skills
- o Investigate local markets
- o Use the industry list
- o Import-export analysis

The identification of new industrial opportunities in the Maghreb countries will be based on import-export analysis. The reason for this choice is justified by the availability of data in this area.

4.1 Import Export Analysis

In this section, new industrial opportunities will be based on import-export analysis. The imports indicate an existing market and can lead to identification of new industrial projects to satisfy a proven demand. Table 20 illustrates the imports structure of each country, the

percentage shares and growth rates for main categories of imports and also selected commodity groups for the period 1967-73.

The highest common percentage share in the imports for the three countries, is represented by the manufactured equipment. For the period 1967-70 Algeria had a growth rate of 29.8% of manufactured goods, from 59.74% the share went up to 66.42%. It is one of the highest of the three countries. Morocco had a growth rate of 15.2% from 43.8% in 1967 to 48.16% in 1973. For this commodity, Tunisia had a stable imports. The share did not change drastically for the period, 53.19% in 1967 and 53.01% in 1974.

The second important percentage share is represented by "All Food Items", which are characterized by a decline in the share of imports during the period studied for the three countries. In Algeria the share declined from 29.42% to 12.75%, for Morocco it went from 31.50% to 27.79% and in Tunisia the share of all food items went from 27.69% to 20.69%. This reflects the growing output of the food processing industries in the three economies. This reduced the dependency of imports for this specific category of goods.

The imports of chemical products had increased in Morocco and Tunisia respectively from 7.49% to 9.87% and from 7.87% to 8.33%. Machinery and equipment represent the biggest share in the category of manufactured goods. As shown in the Table 20, the imports of machinery and equipment increased during the period 1967-1973 from 24.01% to 36.46$ in Algeria, from 20.37% to 24.16% in Morocco, and from 23.92% to 25.55% in Tunisia.

For the period 1967-73 the non-electrical machinery had registered a dramatic increase in Algeria. The share went from 13.74 to 21.71%. This reflected the period where Algeria was importing massive equipment goods of different engineering industries. Imports of metal and metal manufacturing have shown an increase in Algeria and Morocco except in Tunisia.

The share of crude and manufactured fertilizers show a decrease in the imports of Algeria, and Morocco, because of the new installation of petrochemical plants, which are producing different types of fertilizers. Tunisia has shown an increase in the imports. Morocco and Tunisia import crude petroleum, and an increase share for this commodity is reflected in the table. Morocco's share of crude petroleum increased from 3.05% to 4.84%. Tunisia had a dramatic increase from 1.43% in 1967 to 6.63% in 1974. As shown in the industrial economic analysis of the three countries, the light industry had received priority in the latest development plans (Algerian case). Many electrical industries had been installed to satisfy the domestic needs and also to increase the linkages between industries. Algeria started the development of electrical industries in the period 1974-77, this explains why the imports were very significant during the period 1967-70.

The capacity to import increased in some sectors of the economy of the three countries because of the industrialization process, which is characterized by massive imports of capital equipment.

Table 21 illustrates the exports structure of each country, the percentage share and the growth rates for main categories of exports.

The most significant share for Algeria is represented by fuel 70.54% in 1970, and food items 19.97%. For Morocco and Tunisia the food items have a large share, and are respectively 51.30% for Morocco in 1973 and 24.77% for Tunisia in 1974 (a decrease of 10.66% from 1967). The second main category of exports is represented by ores and metal. The Moroccan export of ores and metal had a share of 26.20% in 1973 (a decrease of 8.92% is noticed from 1967). The Tunisian ores and metal exports had a share of 16.92% in 1974, a decline of 8.85% comparatively to 1967 is noticed. The manufactured goods have an increase share in the exports for Morocco and Tunisia.

In 1975 Moroccan imports showed the following characteristics: The foodstuffs products imports represented 24.9% of the total imports characterized by an increase of 2.8% from 1974. The equipment goods had a share of 24% on total imports, the raw materials had a share of 20.4% (substantial decrease of 6.9% from 1974). The semi-finished products shared 19.3% in the total imports (a decline of 4.5% from 1974) the consumption goods represented 10.8%. For the same year 1975 Morocco imported 2.6 million tons of crude petroleum, 57,000 tons of vegetables oils, 12,000 tons of pulp paper, 146,000 tons of metallugic products, 3,000 tons of synthetic fibers, 47,000 tons of chemical products, 37,000 tons of fertilizers and 16,000 tons of plastic products.

In 1975 Morocco exports were characterized by the following shares: Raw materials 63.9%, foodstuff products 23.3%, consumption goods 8%, semi-finished products 4%, equipment goods 8%. The phosphate

Table 20. Import Structure of Each Country, Percentage and Growth Rates for Main Categories of Imports and Selected Commodity Groups (1967-73)

	Total Value In Million Dollars	By Main Categories of Imports % of Total Imports								
		All Food Items	Agricultural Raw Materials	Fuels	Ores and Metals	Manufactured Goods	Chem. Prod.	Other Mfg'd Goods	Machinery and Equipment	Unallocated
Algeria										
1967	639.10	29.42	3.19	1.58	5.95	59.74	9.54	26.19	24.01	0.12
1970	1256.80	12.75	3.86	2.12	13.61	66.42	8.12	22.24	36.46	1.25
Growth Rate	25.30	5.20	33.50	38.00	65.10	29.80	18.70	18.60	44.00	173.20
Morocco										
1967	517.00	31.50	6.89	4.85	7.39	43.80	7.49	15.95	20.37	5.56
1973	1198.00	27.79	8.10	6.48	9.47	48.16	9.65	14.36	24.16	0.00
Growth Rate	13.40	11.00	16.50	19.00	18.10	15.20	18.30	11.40	16.60	65.00
Tunisia										
1967	260.30	27.30	4.86	4.05	10.59	53.19	7.87	21.40	23.42	0.01
1970	1120.30	20.69	5.93	12.30	8.05	53.01	8.33	19.13	25.55	0.01
Growth Rate	23.20	18.40	26.70	44.30	18.40	23.10	24.20	21.20	24.30	25.90

Table 20 cont'd.

Selected Commodity Groups %									
							Metal and Machinery		
Cereals	Crude and Mfg'd Fertilizers	Crude Petroleum	Petroleum Products	Medical and Pharmaceutical Products	Textiles Fibers, Yarns Clothing	Metal Mfg	Non Elec.	Elec'l.	Trans.
9.57	0.78	0.00	1.36	3.77	12.18	9.48	13.74	4.44	5.84
2.39	0.50	0.00	0.33	3.05	7.68	18.20	21.71	6.38	8.37
21.10	8.20	0.00	22.00	16.70	7.40	55.70	45.90	41.40	41.30
12.87	1.34	3.05	1.47	1.88	10.23	9.36	14.65	5.15	0.57
11.17	1.09	4.84	1.15	1.45	8.85	11.50	11.33	4.48	8.35
10.70	9.60	22.50	8.70	8.60	10.70	17.30	8.60	10.80	77.50
13.50	0.68	1.43	1.23	2.39	9.32	11.04	12.45	6.90	4.57
4.95	1.61	6.63	4.03	1.91	9.46	7.26	12.68	4.67	8.20
7.3	39.50	53.30	46.00	19.30	23.40	16.00	23.50	16.50	33.90

Source: Derived from handbook of International Trade and Development Statistics, UN 1976, and African Trade Statistics.

Table 21. Export Structure of Each Country, Percentage Share and Growth Rates For Main Categories of Exports (1967-73)

		By Main Categores of Export %								
Algeria	Total Value in Million Dollars	All Food Items	Agriculture Raw Mater'l	Fuel	Ores and Metals	Mfg'd Goods	Chemical Products	Other Goods	Mach & Trans	Unallo-cated
1967	723.60	16.31	1.70	72.95	1.44	7.60	4.40	1.96	1.24	0.00
1970	1008.80	19.97	0.52	70.54	4.97	4.00	0.36	2.01	1.63	0.08
Growth Rate	11.70	19.50	24.90	10.50	69.80	9.80	51.30	12.60	22.40	69.80
Morocco										
1967	424.10	50.01	5.93	0.50	35.12	7.20	3.00	4.07	0.13	1.24
1973	876.60	51.30	4.01	0.00	26.20	10.04	2.82	6.49	0.73	8.46
Growth Rate	12.90	13.30	5.70	-	7.50	19.30	11.70	22.00	5.01	55.50
Tunisia										
1967	149.20	35.43	5.48	14.86	25.67	18.56	14.76	3.22	0.58	0.00
1974	914.20	24.77	1.88	35.91	16.82	20.63	13.01	6.95	0.67	0.00
Growth Rate	29.60	23.10	11.20	47.00	22.00	31.50	27.20	44.60	32.30	0.00

Source: Derived from handbook of International Trade and Development Statistics, UN 1976, and African Trade Statistics.

exports show a decline figure from 18.7 million tons in 1974 to 13.1 million tons in 1975. This decline is the result of the price fluctuation of this commodity on the International market. Tunisia is heavily dependent on foreign trade with trade turnover accounting for around 35-40% of GNP. The exports are characterized by four items such as phosphate, olive oil, petroleum, and wine, which account for more than 60% of the total exports. The exports of petroleum started in 1966. The main imports are represented by the manufactured goods (clothing textile), machinery and transport equipment. Algerian imports-exports represent the following characteristics: In 1975 the imports of equipment goods showed an increase share comparatively to the previous years. The semi-finished products showed a decrease which can be explained by the starting production in the forward and backward industries, and this after the installation of the heavy industry. The consumption goods share fluctuated between 11% and 16%. This commodity is strongly regulated because of the protection policy and the austerity program, which encouraged the consumption of domestic products. The exports were largely dominated by the energy and lubricants (petroleum and natural gas 93.1% in 1975). Table 22 synthetizes the imports-exports situation of the Algerian economy. The imports of the Maghreb countries are characterized by an important share of manufactured equipment. This group of commodity showed an increase of 29.8% for Algeria and 15.2% for Morocco for the period studied. These imports are essentially composed of chemical products, machinery and equipment such as construction and mining machinery, mechanical handling equipment, electric power machinery, iron and steel tubes, mechanical appliances and parts, and

Table 22. Algerian Evolution of Commodity Shares in Imports-Exports %

(% of Total Import-Export)

IMPORTS	1971	1972	1973	1974	1975
Foodstuffs, Beverage, Tobacco	12.9	16.1	13.8	20.9	19.0
Energy and Lubricants	3.5	2.3	1.6	1.4	1.7
Raw Materials	7.1	6.7	5.4	7.1	5.5
Semi-Finished Products	26.7	26.5	27.3	27.7	22.9
Equipment Goods	37.5	35.4	35.6	31.4	39.1
Consumption Goods	12.3	13.0	16.3	11.3	11.5
TOTAL	100.0	100.0	100.0	100.0	100.0
EXPORTS					
Foodstuffs, Beverage, Tobacco	12.2	9.1	12.2	3.4	3.7
Energy and Lubricants	74.9	82.3	83.0	93.2	93.1
Raw Materials	4.3	3.4	1.6	1.6	1.2
Semi-Finished Products	2.9	2.1	1.7	1.2	1.2
Equipment Goods	4.7	2.3	1.0	0.4	0.7
Consumption Goods	1.0	0.8	0.5	0.2	0.1
TOTAL	100.0	100.0	100.0	100.0	100.0

Source: Derived from different statistical publications on Imports-Exports, 1975.

telecommunication equipment. The Morocco's imports were dominated by foodstuff products and capital goods equipment which respectively represented 24.9%, and 24% on total imports for the year 1975. The three countries also import some raw materials and semi-finished products. The agricultural sector showed a dependency on the imports of manufactured fertilizers for the period 1974-75. This has also been characterized by imports of protective chemicals such as insecticides, fumigants, fungicides, and herbicides.

The Maghreb exports are essentially dominated by natural gas, petroleum, phosphates, and iron ore. A need for the development of industries to transform these primary commodities results from the price fluctuations of these commodities on the international market. From this aspect, the development of fertilizer industry, petro-chemical industry, and steel and iron industry should be considered in the area.

4.2 Intra-Trade of the Maghreb Countries

The intra-trade analysis in the area shows the inter-economical relationships which exist between the three countries, and the structure of inflow and outflow of different commodities. Table 23 shows the intra-trade in the area. The lack of strong trade relationships is one of the consequences of colonization. The maghreb countries could not change their pattern of imports - exports because of the pattern of production inherited from the colonization. Historically, exports were oriented toward Europe rather than toward intra-area trade. Positive signs for an increase tendency of intra-trade can be noticed through 1973-74, but a decline in the pattern is noticeable for the year 1975,

Table 23. Intra-Trade in the Maghreb Countries*

	Algeria			Morocco			Tunisia		
	1973	1974	1975	1973	1974	1975	1973	1974	1975
Algeria									
				25.8	52.8	2.2	.9	5.3	2.6
Exports				32.9	45.9	30.8	12.6	18.9	39.8
Imports									
Morocco									
Exports	29.0	41.7	28.0				5.9	13.2	7.2
Imports	26.4	58.1	2.4				1.9	2.0	.4
Tunisia									
Export									
Exports	6.0	17.3	36.2	1.8	1.8	.6			
Imports	.9	5.8	2.9	2.7	11.2	8.9			

*Million U.S. Dollars

Table 24. Imports and Exports*

	Exports			Imports		
	Algeria	Morocco	Tunisia	Algeria	Morocco	Tunisia
1972	1,509	726	467	1,388	749	330
1973	2,246	1,083	634	2,002	1,086	376
1974	3,955	1,743	1,024	4,715	1,943	858
1975	5,524	2,349	1,302	4,574	1,791	855
1976	4,858	2,729	1,371	5,389	1,542	793

*Million U.S. Dollars

Sources: Derived from U.N. Commodity Trade Statistics publication and from International Trade and Development publication, New York, 1975.

especially between Morocco and Algeria. The reason for this is the political differences on the decolonization of the Spanish Sahara. This factor was a constraint for any further import-export development.

Table 24 shows the significant weight of imports-exports of the Algerian economy in the area. The biggest share of Algerian exports is represented by natural gas and petroleum, which share almost 80% of the earnings. Her imports are characterized by massive imports of high technologies (equipment goods).

Another aspect of the intra-trade is the liberalization problems. When the intra-Maghreb competition became higher for exports production on the European market, the exports policies of the three countries vis-a-vis the rest of the world did not follow any coordinated pattern. The intra-trade had also been weakened by the non-convertibility of the national currencies.

Establishment of regional commercial mechanism can increase and promote the intra-trade in the three economies. The liberalization of trade and the reduction of quantitative restrictions on goods transactions in the area can also promote the intra-trade. The intra-trade within the Maghreb countries has been constrained by the similarity of their economic structure inherited from the past. The existing trade between the countries is limited to petroleum, steel, and some agricultural products. The implementation of the industrial integration within the area will increase the intra-trade through more vertical and horizontal specialization.

4.3 Demands on the Industrial Sector

In the Maghreb countries, industries are installed to complement

the existing industries. However, the industrial output of these large scale technologies is bigger than the domestic needs of the countries. A more realistic picture of new industrial opportunities should be complemented by an input-ouput analysis. Through the input-output analysis, supplementary information on capital and capacity might be used to shed light on the possible needs for additional plant and equipment. It also permits to analyze changes in the economy because it provides a series of relationships between the demand of final markets and the output of industries. So an input-output analysis in the Maghreb countries will permit identification of industries which are affected directly or indirectly by specific changes in consumer expenditures, by increasing imports and exports.

The input-output analysis permits to trace all the chain of reactions of the different industries and measuring the demands, both direct and indirect, imposed upon each of the industries. To illustrate this aspect, suppose that there is an increase demand by consumers for passenger cars. This will generate an increase in the automobile output, an increase in the demand for the steel, which in turn will require more chemical products such as sulfuric acid, more iron, more limestone, more coal, more demand for upholstery fabrics which will require more natural fibers from agriculture, more synthetic fibers from the chemical industry and more plastic. The chemical industry will require more supply of synthetic such as nylon and rayon for the tire industry. Unfortunately, the model building and the research analysis have been constrained by many factors such as:

- Regional sectoring: Should we divide the Maghreb area into more than three regional sectoring according to the geographic and economic characteristics?

- Industrial sectoring: Some substantial discrepancies do exist in the industrial sectoring of the three countries. The industrial classification should become uniform for the three countries, so global interindustry analysis for the Maghreb can be achieved. For instance, some countries put mining in the agriculture sector while some others put it in the industry manufacturing. The components of consolidated sectors for the Maghreb can be studied as follows:

Agriculture: Agriculture, Livestock, Fishery, Forestry

Agriculture Processing: Food industries, Beverages, Tobacco

Agro-Allied Industries: Textiles, Clothing, Yarn, Leather, Skins, Footwear, Wood, Carpentry Spinning, Cardboard, Rubber products.

Industry-Manufacturing-Mining: Gas, Petroleum, Electricity, Mineral and Metals, Mechanical products, Chemicals

Construction-Utilities and Services: Building and Public Work, Transport, Services.

- Data Collection:

  - o Lack of recent data for the period 1975-77 on sales patterns between the sectors in the Maghreb countries.
  - o Data limitation on the final demand of each sector.
  - o Lack of industrial surveys on the different sectors of the economy.

For all the reasons mentioned above, the analysis was just limited to the presentation of the technical coefficients. These technical

coefficients are computed on the bases of the 1969-70 data. They are presented in the Tables 25, 26 and 27. The analysis of the interindustry flow tables of the three countries can be summarized as follows:

The Algerian interindustry table shows a strong relationship between the agriculture sector and the foodstuff industries. This can be explained by the priorities given to the light industries, especially canneries, sugar refineries, and the promotion of agricultural products exports. The petroleum sector does not show a significant impact on the chemical industries in the late 1969-70 period, because the totality of the petroleum was exported. The main market for the chemical products as represented in the table is the agricultural sector. The energy equipment sector absorbs a significant output of the mechanical and electrical industries. More interindustry effects are expected as the different industries will develop more forwards and backwards linkages.

For the Tunisian economy, the largest share of the agricultural output is absorbed by the agricultural processing industries. Tunisia exports a substantial amount of agricultural products towards Europe. More emphasis should be oriented towards the agro-allied industries, since Tunisia still imports textile and clothing. In the manufacturing sector more interindustry linkages should occur to provide sufficient cast iron and steel to parallel industries.

Morocco's interindustry flow table shows that a large share of the agricultural output is absorbed by the agriculture processing industries (food industries, beverages) while the agro-allied industries registered a less significant share. More agricultural development

Table 25. An Inter-Industry Flow Table - Algeria

PURCHASES BY / SALES BY	AGRICULTURE	FOODSTUFF INDUSTRIES	PETROLEUM	ENERGY EQUIPMENT	ENERGY OTHER THAN PETRO.	MINING	CONSTRUCTION MATERIAL	MECHANICAL & ELEC. IND.	CHEMICAL PRODUCTS	TEXTILE & LEATHERS	OTHER INDUSTRIES	BUILDING & PUBLIC WORKS	TRANSPORTS	SERVICES
AGRICULTURE	.111	.836	-	-	-	-	-	-	-	.021	.017	-	.000	.014
FOODSTUFF INDUSTRIES	.062	.661	-	-	-	-	-	-	.047	.025	.004	-	.004	.197
PETROLEUM	.088	.026	.351	.077	.021	.010	.017	.028	.004	.019	.005	.112	.114	.057
ENERGY EQUIPMENT	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ENERGY OTHER THAN PETROLEUM	.184	.081	.067	.019	.215	.041	.070	.044	.023	.021	.031	.030	.043	.068
MINING	-	-	.656	-	-	-	-	-	.341	-	.002	-	-	-
CONSTRUCTION MATERIAL	.084	.029	.005	.153	-	.001	.209	.012	.004	-	.009	.551	-	.006
MECHANICAL & ELECTRICAL INDUSTRIES	.012	.019	.042	.133	.015	.013	.010	.390	.009	.015	.009	.179	.047	.097
CHEMICAL PRODUCTS	.246	.019	.031	.028	-	.022	.000	.039	.296	.077	.046	.039	.033	.072
TEXTILE & LEATHER	.006	.007	-	-	-	-	-	.002	.000	.933	.005	.019	.007	.009
OTHER INDUSTRIES	.041	.082	.011	.034	.006	.010	.019	.034	.050	.024	.327	.096	.031	.098
BUILDING & PUBLIC WORKS	.024	.031	.109	.209	.063	.005	.009	.052	.023	.041	.012	.105	.024	.199
TRANSPORTS	.026	.026	.099	.198	.003	.047	.024	.074	.013	.026	.019	.124	.062	.023
SERVICES	.131	.022	.120	.202	.005	.007	.014	.029	.007	.019	.015	.140	.087	.095

Table 26. An Inter-Industry Flow Table - Tunisia

Purchased By / Sold By	AGRICULTURE	AGRICULTURAL PROCESSING	AGRO-ALLIED INDUSTRIES	INDUSTRY-MANUFACTURING-MINING	CONSTRUCTION SERVICES UTILITIES
AGRICULTURE	.049	.651	.019	.028	.013
AGRICULTURAL PROCESSING	.009	.239	.004	.009	.031
AGRO-ALLIED INDUSTRIES	.013	.013	.244	.022	.049
INDUSTRY-MANUFACTURING-MINING	.076	.027	.026	.140	.238
CONSTRUCTION-UTILITIES-SERVICES	.023	.026	.005	.058	.049

Table 27. An Inter-Industry Flow Table - Morocco

Purchased By / Sales By	AGRICULTURE	AGRICULTURE PROCESSING	AGRO-ALLIED INDUSTRIES	INDUSTRY MANUFACTURING MINING	CONSTRUCTION UTILITIES SERVICES
AGRICULTURE	.065	.159	.039	.006	.003
AGRICULTURAL PROCESSING	.003	.273	.001	.005	.004
AGRO-ALLIED INDUSTRIES	.018	.029	.291	.025	.039
INDUSTRY-MANUFACTURING-MINING	.068	.042	.044	.026	.122
CONSTRUCTION-UTILITIES-SERVICES	.008	.027	.023	.061	.129

should be oriented towards the following areas: textiles, clothing, leather, skins, wood, rubber products and footwear. The agro-allied industries need more forwards and backwards linkages. The metal manufacturing sector provided a significant input to the construction industry, which registered 8% of growth rate for that period. These interindustry flow tables only give the direct effects among industries.

4.3.1 Agricultural Sector Demands

The agriculture sector presents a potential market for the industrial output in the area. Importance of industries processing agriculture, fishery, and forest products, as well as the complex of industries serving agriculture through the availability of industrial inputs, such as fertilizers, machinery, chemical products, is very significant to the Maghreb countries. The combined agricultural and industrial development through the agro-allied industries can permit a global development without being detrimental to each other.

Agriculture is the direct market of the fertilizer industries. Before 1970, the fertilizer industry in the Maghreb countries was constrained by the archaic agriculture using traditional methods of cultivation. The land reform in the three countries tried to modernize the sector by using more modern inputs such as nitrogen fertilizer so now the fertilizer industry is growing. As shown in the chapter three, the fertilizer industry in the Maghreb is the most advanced in Africa. Both nitrogen and phosphate fertilizers are manufactured. With the large potential of raw materials, which exists in the region, the area is becoming a large exporter of nitrogen fertilizer. The use of hydrocarbon raw materials for ammonia manufacture will make the region one of the leading producers of nitrogen

and phosphate fertilizers in the world. This will profit to the agricultural sector.

The government policies of the three countries are oriented to the farmers, to provide the different types of fertilizer needed, and to educate them by giving them information on methods of cultivation. Until recently, the agricultural sector in the area suffered from lack of major inputs such as chemical products, fertilizer, agricultural machinery, and irrigation problems. The failure to develop this sector will generate adverse effects on the expectation of the industrial development.

The agricultural share in the added value of the GDP is decreasing while the industrial share is increasing. In Morocco the share will decrease from 24.0% in 1975 to 20.8% in 1980. For Algeria the share will decrease from around 17.5% to around 15% in 1980.

Table 28 illustrates the ratio of total demand to initial increase in demand in each sector. This shows the weaknesses of the forward and backward linkages between the different sectors of the economy in the Maghreb area.

Table 28. Ratio Of Total Demand To Initial Increase In Demand In Each Sector

Sector	Algeria	Morocco	Tunisia
Agriculture	1.224	1.224	1.332
Food Processing	1.984	2.351	2.180
Agro-allied industries	2.570	2.280	2.201
Industry, Mining, Mfg.	1.482	1.865	1.854
Construction, Utilities	1.505	1.470	1.594

As shown in the table, the agriculture sector represent the lowest ratio which is respectively 1.224 for Algeria, 1.224 for Morocco and

2.201 for Tunisia. The table shows the needs of the agriculture, characterized by the traditional methods. To put more dynamism in the sector more mechanization processes are needed.

Table 29 related to the imports-exports of agricultural fertilizers shows a dependency on the imports of manufactured fertilizers for the periods 1974-75. The share of this commodity has increased in the area except for Algeria. For Morocco the imports of manufactured fertilizers went up from $25, 380,000 in 1974 to $41,013,000 in 1975. For Tunisia a substantial increase from $17,914,000 in 1974 to $18,020,000 in 1975 is noticed. The pesticides also show an increasing share in the imports. Algeria in 1974 registered an increase share which went up from 3,766 to 4,000. These above figures are expressed in 1000 dollars.

This import-export analysis of manufactured fertilizers permit us to identify new industrial opprotunities. In this case the development of manufactured fertilizers, and pesticide industries is desirable since the potential market exists. This also illustrates the needs of other products for agriculture such as: insecticides, fumigants, fungicides, herbicides and other chemical products. Tables 30 and 31 illustrate the needs for protective chemicals and fertilizers.

The agricultural sector also provides potential market for machinery and equipment. Agriculture cannot be mechanized if there is a lack of such equipment. The development of tractor construction is a necessity because it is the keystone of the mechanication of agriculture. More irrigation is necessary (development of canalizations). and more roads which can lead to market facilities are needed. Algeria

Table 29. Imports and Exports of Agricultural Fertilizers
(in 1000 $)

	1974					1975				
	Tractors		Crude Fertilizers	Manufactured Fertilizers	Pesticides	Tractors		Crude Fertilizers	Manufactured Fertilizers	Pesticides
	Number	Value				Number	Value			
Algeria										
Imports	3203	27,857	-	24,300	3,766	3000	30,000	-	4,200	4,000
Exports	-	0	8,544	14,021	246	-	-	15,500	4,000	-
Morocco										
Imports	2800	12,807	57	25,380	9,607	3326	21,531	-	41,013	11.597
Exports	-	-	938,787	31,999	20	-	-	847,147	26,080	651
Tunisia										
Imports	2353	16,197	79	17,914	3,421	3546	22,668	166	18,020	4,681
Exports	-	0	109,099	77,606	30	-	-	117,799	41,701	137

Source: Derived from statistical data of the three countries

Table 30. Rate of Fertilizers and Protective Chemicals Application

COUNTRY	Arable Land (1,000 Ha)	Fertilizers Used (000 MT)	Kg. per Ha	Protective Chemicals (metric tons)	Metric Tons (per 1,000 Ha)
Algeria	7,066	18.0	2.5	975	0.14
Morocco	7,860	42.9	5.5	1,318	0.17
Tunisia	4,334	19.9	4.6	24,264	5.60

Table 31. Agricultural Needs of Fertilizers in the Area (1,000 Metric Tons)

COUNTRY	1970	1975	1980
Algeria	19.9	22.5	26.1
Morocco	48.5	56.2	65.2
Tunisia	22.5	26.1	30.3

Source: Derived from agricultural publications of the three countries, and fertilizers output of the area.

has one of the most significant park of tractors in Africa. The country park is composed of 26,800 tractors, and a distribution of 3.8 tractors for 1,000 hectares (ha). Morocco has 7,860 tractors, with a distribution of 1.4 tractors per 1,000 Ha. Tunisia has a park of 4,334 tractors with a distribution of 2.9 tractors per 1,000 Ha.

4.3.2 Demands from Other Sectors

Reaching the horizon 1990, the industrial consumption pattern of the Maghreb population is expected to grow positively. The industrial market absorption is expected to increase, so the market will remain unsaturated. This aspect is illustrated by the following figures: Steel consumption, for instance, will increase to 60 Kg per head comparatively to the world average which is 120 Kg. The consumption of electric power is expected to reach 350 Kwh per head compared to 800 Kwh in the world average consumption. The Maghreb countries will consume around 0.8 Kg per head in 1990. The consumption of sulfuric acid will be 10 Kg per head compared to 15 Kg in the current world average.

Table 32 shows the structure of the demand of engineering products by industrial origin and consumption. The industries entitled group 35 represents machinery except electrical equipment. Groups 36 and 37 show the share of switchgear and switchboard apparatus. Group 38 illustrates the share of measuring, analyzing and controlling instruments.

The demand of engineering goods in 1975 was respectively 6.54% for Algeria, 6.13% for Morocco, and 8.0% for Tunisia. The annual rate of growth of this demand is expected to increase for the period 1975-80. The projected rates are estimated to be around 7.52% for Algeria (.99%

Table 32. Maghreb Structure of the Demand of Engineering Products By Industrial Origin and Consumption (Millions of Dollars)

	1964				1980			
	35	36137	38	Total	35	36137	38	Total
Agriculture	7.48	24.50	1.92	33.90	13.44	56.80	4.92	75.6
Mining & Quarrying	16.19	87.55	20.81	124.55	63.57	332.47	34.90	431.00
Manufacturing	14.73	59.90	6.30	80.93	83.27	464.99	47.88	546.14
Construction	53.00	8.10	3.25	64.35	147.00	70.32	20.00	237.32
Energy	0.20	9.30	0.15	9.65	1.90	85.15	1.50	89.25
Services	11.97	73.66	96.34	385.32	44.35	303.39	342.25	739.99
Consumption	21.90	19.00	25.50	66.40	72.57	77.68	130.57	282.82
TOTAL (million $)	125.47	282.01	154.27	561.27	426.10	1391.50	634.08	2451.62
Agriculture	10.75	12.96	1.84	25.55	18.49	29.60	3.00	51.09
Mining & Quarring	29.89	47.75	10.40	78.04	108.67	181.49	21.82	311.98
Manufacturing	21.39	31.09	3.75	56.23	111.07	241.97	27.93	380.97
Construction	75.07	4.17	2.01	81.25	161.00	36.29	12.27	209.56
Energy	0.28	4.76	0.66	5.70	2.66	43.25	0.94	46.85
Services	20.69	40.55	63.96	125.20	70.10	160.38	252.52	483.00
Consumption	14.40	6.05	12.95	33.40	45.00	24.10	65.60	134.70
TOTAL (Million $)	172.47	147.33	95.57	415.37	516.00	717.00	384.00	1618.15

Source: Derived from the statistical data of the three economies, and U.N. publications.

increase), 6.90% for Morocco (.77% increase), and 8.75% for Tunisia (.75% increase).

The share of imports to total supply for selected industries are presented in the Table 33. The table shows that there is a domestic demand for a variety of industrial products, since they will continue to be imported. For example the total demand for electronic products in the area by the year 1980 will be:

Consumer products - 65 million dollars

Industrial equipment for industry - 165 million dollars

Industrial equipment for public work sector - 77 million dollars

Table 33. Imports' Share of Total Supply

	Share for 1980		
SECTOR	Algeria	Morocco	Tunisia
Food	17.9	24.6	19.3
Textiles	3.1	4.3	4.1
Clothing	6.4	1.6	1.6
Ferrous Metal	4.1	5.7	4.1
Non-Ferrous Metals	5.2	3.5	2.9
Metal Products	8.2	5.7	4.7
Machinery	17.9	32.6	27.3
Transport Equipment	16.9	3.4	15.0
Chemicals	12.1	11.5	11.9

Source: United Nations, Economic Commission for Africa publications, New York.

4.4 Demographic, Labor Force and Income Distribution Aspects

4.4.1 Demographic Aspects

The most significant constraint in industrial development is represented by the demographic aspects, which determine the market size. Taken individually, the Maghreb countries face the serious problem of the narrowness of their markets. Thus, it is necessary to study the demographic evolution of the area to determine what its future needs will be so that adequate technologies can be selected to satisfy the domestic needs. Table 34 shows some demographic aspects.

The birth rate is 3% in the area. In 1980, the population of the Maghreb countries will be around 45 million. This will constitute a sizable market for their industrial output. According to industrialization trends in the area, integration of the three countries' markets is a necessity, taking into account the production capacities of the different industries and the fact that the market size of each country is not sufficient to absorb all the industrial output. If the existing industries are to run at full capacity, a bigger market is needed. In the 1960's the small buying power of the people can be explained by the following factors: low income, which is due to low productivity, which in turn is due to limited captial. The economies of scale are not favorable in these circumstances because such types of industries can create more problems (efficiency and high costs). A larger market at the regional level can present advantages and encourage the development of economies of scale. With integration, the market situation will not restrict the industry's bargaining power in selling and buying. This also will increase the efficiency and reduce the production costs.

Table 34. Demographic Growth in the Maghreb
(In Thousands of Persons)

	ALGERIA		MOROCCO		TUNISIA	
	1966	1980	1966	1980	1966	1980
Population	11,600	17,800	13,400	20,700	4,600	6,800
Annual Increase	350	570	400	700	130	200
Increase in the Active Population (15-65 years)	175	290	205	356	60	106

A market size of 45 million people can open many opprotunities for industries which until now have not been established because of the market constraint. Through the industrialization process, the population surplus could be absorbed. The necessary growth in agricultural production parallel with industrialization could create an expansion of the modern sector. This would absorb the surplus of the rural population because of the transfer from agriculture to industry. Table 32 shows the number of rural population and its percentage of total population in each country.

Table 35. Rural Population of the Maghreb Countries (Million and Percentage)

	1970		1975		1980	
	Rural Population	%	Rural Population	%	Rural Population	%
Morocco	11.2	71	12.5	67	13.8	63
Algeria	8.9	69	9.6	64	10.2	59
Tunisia	3.9	75	4.3	73	4.6	69

4.4.2 Labor Force

The most significant resource which goes with the industrialization process is the labor force. Any industrialization process has to be based on know-how. This characteristic can be illustrated by the entrepreneurial and managerial elite, as well as the skilled engineering and technicians. The industrialization process was viewed as a solution to solve or at least reduce the critical problem of unemployment in the Maghreb area; however, the strategy has some shortcomings. The industrial development implemented in the region needed qualified people to carry out the technical tasks, but the scarcity and the inadequacy of the supply of skilled labor to operate on the high technologies imported were very much felt. The active population did not respond quickly to the urgent needs of the industries. This can be explained by the lack of planning and training allocation of the

human resources. In their late development plans, the three countries have given higher priorities to training and education. Table 36 illustrates the structure of the nonagricultural employment in 1970 and 1990. The biggest share is represented by the manual workers who are active in the manufacturing and craft industries, building and public works. The craft industry is very significant in the Maghreb because of its traditional characteristics. It is considered as an additional source of earnings. By 1990 their industries will absorb 3,490,000 workers. This will be very encouraging if these workers get adequate training.

4.4.3 Analysis of Incomes

Per capita income is expected to increase in tandem with the economic development of the area. The Gross Domestic Product (GDP) for Algeria in 1974 was around 11,465 million dollars. In the same year, Morocco had a GDP of 6,119 million dollars and Tunisia had 3,494 million dollars. The per capita GDP in 1974 for the three countries was 330 dollars for Algeria, 362 dollars for Morocco, and 620 dollars for Tunisia. Table 37 illustrates the increase in per capita income. The total national income for the three countries for the year 1974 was around 9,000 million dollars for Algeria, 6,240 million dollars for Morocco, and 3,325 million dollars for Tunisia. The per capita increase presented in Table 37 is very conservative. Based on an 8% annual rate of growth of industrial output, the per capita value added would increase from 45 dollars in the late 1950's to 127 dollars in 1985 or 2.8 times. Any increase in per capita income in the Maghreb countries will improve

Table 36. Structure of Non-Agricultural Employment in 1970-1990
(Jobs in Thousands)

Branches of Industry	Manual Workers		Clerical Worker		Master, Craft Smen, Direction		Executive Liberal Profession		TOTAL	
	1970	1990	1970	1990	1970	1990	1970	1990	1970	1990
Industries & Crafts	640	3,265	-	-	186	440	30	235	850	3,940
Building, Public Works	220	760	-	-	20	70	5	20	245	850
Transport	80	245	-	-	35	100	5	15	120	360
Trade & Services	-	-	360	1,415	360	700	95	375	815	2,490
Total for the Economy	940	4,270	360	1,415	595	1,310	135	645	2,030	7,640

Source: Derived from UN publications, and statistical labor of the three countries.

Table 37. Increase in Per Capita Income

COUNTRY	1965	1980
Morocco	$196	$260
Algeria	220	290/300
Tunisia	212	285

the standard of living of the population. Through this process, the buying power of the population will increase, thus permitting absorption of the industrial output and enlarging the market for certain commodities. It should be noted, however, that differences exist between per capita income in rural and urban areas. The rural population of the Maghreb countries has a traditional pattern of consumption.

4.5 Underutilization of the Existing Industrial Plants

The Maghreb countries are facing a serious problem of underutilization of their industrial plants. This can be explained by the large scale industries chosen and implemented without giving too much weight to the market size. Since the market is very small, the alternative of exports encounters serious problems related to the competition factors on the international market (high cost of production, and quality problems). In addition to these factors, a lack of skilled labor in management and engineering complicated the phenomenon. For all these reasons these industries do not run at full capacities.

For example Algeria has a domestic consumption of steel around 600,000 tons per year. However, the plant capacity for this commodity is over 1,200,000 tons a year. The domestic demand for the same product is respectively 400,000 tons a year in Morocco and 200,000 tons a year in Tunisia. We can notice that the Algerian plant by itself is sufficient to satisfy the needs of the three conntries.

The underutilization of industrial capacity in Morocco is estimated at:

- o 10% of all plants were operating at full capacity
- o 47% of all plants were operating at 80% capacity
- o 43% of all plants were operating at 40 to 80% capacity.

Table 38 shows the capacity in tons and the rate of utilization of selected manufactured products in the Maghreb countries in the late 1960's. For Morocco the critical rates of underutilization are represented by the following industries: aluminum item 29%, phosphate fertilizers 34%, and Galvanized industries 50%. Algeria shares more critical rate of underutilization especially in the Taps industry 21%, organic fertilizers 28%, explosives 24%, cement products 26%. All these industries run at less than 50% of their full capacities. Tunisia also has a critical rate of underutilization in the Metal industry (plates 8% and the cement tiles which runs at 26%. These underutilization rates did not take into account the recent industries after 1970. The rate of underutilization for these new industries is expected to be higher especially in the mechanical, electrical, and electronic industries.

Table 38. Capacity (Tons) and Rate of Utilization (%) of Selected Manufactured Products in the Maghreb Countries in Late 1960's.

PRODUCTS	Morocco		Algeria		Tunisia	
	Capacity	Rate	Capacity	Rate	Capacity	Rate
Taps	110	63	300	21	-	-
Household wares, plated and Galvanized	2,000	50	200	75	430	75
Chrome Plated Item	1,500	56	-	-	-	-
Aluminum Item	1,000	29	650	50	-	-
Metal plate item	1,200	72	2,000	34	1,000	8
Cement	1,150,000	70	990,000	79	720,000	55
Cement Products	35,000	60	185,000	26	107,000	52
Cement Tiles*	-	-	1,200,000	42	1,345,000	26
Red Bricks	100,000	85	734,910	51	167,000	55
Hydrochlorides	5,000	79	2,550	55	-	-
Chlorure	4,000	86	4,000	49	1,500	48
Sodium	4,500	82	5,000	49	3,000	45
Suferphes plates	-	-	130,000	74	-	-
Composed Fertilizers	130,000	77	270,000	44	150,000	52
Phosphate Fertilizers	130,000	34	-	-	460,000	38
Organic Fertilizers	-	-	18,000	28	-	-
Explosives	4,900	52	24,300	24	4,500	48
Plastics	15,400	59	7,100	48	3,200	69
Rubber	4,000	60	1,400	50	-	-

*Cement Tiles, capacity measured in m^2.

Source: Economic Commission for Africa, UN, Industrial Sruvey of the North African Countries, New York.

The Import-Export analysis permitted the identification of new industrial opportunities within the Maghreb countries. But this approach should be complemented by an input-output analysis, which can give us supplementary information on possible needs for additional plants and equipment. This later analysis has been constrained by the lack of data of the three economies. The Import-Export analysis identified the following industries of interest for the area:

- Fertilizer industry composed of nitrogenous fertilizers and phosphate fertilizers.
- Petrochemical industries such as Polymer, Aromatics, Polyester, Plastic products, Protective chemicals, Petroleum and refineries.
- Manufacturing industries, machinery and metal industries.
- Electrical and electronics industries.
- Textile industries.
- Refractory products industries.
- Other industries: Power industry, Forest industry, Food processing industry.

The analysis of the rate of underutilization of some of the existing industries within the area shows that the industry such as: household wares, plated and galvanized items, aluminum items, metal plate items, some phosphate fertilizers, some plastics industries, Chlorure and sodium industries, should not be developed. Through the industrial integration, these industries can run at full capacity because of more extended markets.

CHAPTER V

INDUSTRIAL PROGRAM FOR THE MAGHREB COUNTRIES

The choice of industries to integrate must derive from compromise between national and regional interests. Industries which offer the best alternative or prospect of substantial regional growth will be given priority. The import-export analysis presented in the previous chapter showed the new industrial opportunities which can be developed in the framework of the integration. The analysis showed the need for the development of capital goods and heavy industries, in which economies of scale and strong interindustry effects could be expected. The industries analyzed in this chapter are based on the selection done in Chapter IV.

5.1 Industries of Interest for the Area

5.1.1 Fertilizer Industry

The fertilizer industry in one of the leading industries in the area. The consumption of this commodity is increasing dramatically, because of the modernization of the agricultural sector. Fertilizers alone contribute 45% of the important technical inputs for increasing agricultural productivity. The production of intermediate compounds like ammonia and phosphoric acid is abundant because of the minimum raw material cost. Table 39 shows the expected production capacity for each country, and Table 40 shows the projected consumption of

fertilizers for the year 1980.

Table 39. Production Capacities by the Year 1980 (Tons)

Product	MAGHREB Algeria	Morocco	Tunisia	Total
Ammonia	700,000	150,000	550,000	1,400,000
Hyperphosphate	-	100,000	150,000	250,000
Single Super-phosphate	100,000	150,000	100,000	350,000
Sulfuric Acid	510,000	913,000	750,000	2,173,000
Phosphoric Acid	175,000	306,000	240,000	721,000
Triple Super-Phosphate	-	800,000	350,000	1,150,000
Diammonic Phosphate	-	600,000	200,000	800,000
Nitric Acid	300,000	-	45,000	345,000
Ammonium Nitrate	350,000	-	85,000	435,000
Urea	280,000	-	50,000	330,000

Source: Derived from industrial output publications of the three countries, 1974.

By the year 1980, the Maghreb countries will consume the following:

Table 40. Consumption of Fertilizers in the Maghreb (1000 Tons)

COUNTRY	1980 Nitrogenous Fertilizers	1980 Phosphate Fertilizers	1980 Potassic Fertilizers	Annual Rate N	Annual Rate P_2O_5	Annual Rate K_2O
ALGERIA	90	90	70	12.2%	9.7%	13.9%
MOROCCO	80	90	50	11.1%	8.6%	12.2%
TUNISIA	25	550	20	11.2%	6.2%	12.3%

The two main categories of fertilizers are:

- o Nitrogenous Fertilizers: Ammonium Sulfphate, Ammonium Nitrate and Urea-Ammonia
- o Phosphate Fertilizers: Hyperphosphate, single superphosphate, triple superphosphate, and Diammonic phosphate.

The phosphate fertilizers share is declining in the world market. So the Maghreb countries should orient the fertilizer industry towards high analysis phosphate material. Triple superphosphate, containing around 46-47% nitrogen, is considered a high analysis phosphate fertilizer. The prospect for the future is based on the nitrogenous fertilizers.

The development of superphosphoric acid has given rise to extensive research on ammonium phosphates. Solid ammonium polyphosphates from ammonia of furnace or wet process superphosphoric acid must attract considerable interest as a prospective high analysis fertilizers in the Maghreb. The future allocation of fertilizer plants within the region must be determined by a feasibility studies (study of marketing and cost analysis). Table 41 illustrates the cost structure of fertilizer plants which can be considered as standard.

Table 41. Cost Structure for Fertilizer Industry Plants
(expressed in %)

CATEGORY	Ammonia (66,000 Tons)	Urea (40,000 Tons)	Ammonium Nitrate (82,500 Tons)	Ammonium Sulphate (50,000 Tons)
Materials	29.5	39.7	42.5	42.2
Direct Labor	5.1	4.6	3.9	6.5
Utilities	3.6	6.3	14.0	1.0
Maintenance	8.5	8.0	6.1	7.7
Depreciation	23.5	18.1	13.9	17.8
Supervision	6.9	6.6	5.8	8.8
Opportunity Cost	15.0	11.6	8.9	11.2
Other	7.9	5.0	4.9	4.8
	100.0	100.0	100.0	100.0
Dollar Cost Per Ton	34.63	50.09	37.44	38.29

The cooperation between the three countries is needed in the areas of fertilizer industry, especially in the triple superphosphate, diammonic phosphate, ammonium nitrate and urea. Morocco and Tunisia with their abundant reserves of phosphate, and Algeria with its large natural gas reserves, complement each other.

5.1.2 Petrochemical Industries

The cooperation in the petrochemical industry can be based on two criteria:

- Cheap raw material - since this typical industry's most important input is petroleum, Algeria represents much more advantages than Morocco and Tunisia, which import petroleum from outside and at higher prices.

- Cheap energy - the second important input is the power energy (electrical energy). This commodity is produced cheaply in Algeria.

So the industrial integration can consider the following areas:

o Polymer

- High and low density of polyethylene
- PVC (polychlorure de vinyl)
- SBR (styrene, butadeene, resin, rubber)
- P.O. (polypropylene)

o Aromatics

- Benzene - Toluene, Paraxylene - Orthozylene
- Styrene

o Polyester Fibers

- EG, DMT (Dimethyle Terephalate)
- ATP (Acid terephtalic)
- Polyester chips
- Polyester fibers

o Plastic products

- Plastic film
- Sheet
- Non textile monofilaments
- Vulcanized fiber

o Protective Chemicals

- Insecticides
- Fungicides
- Fumigants
- Herbicides

o Other Chemicals

- Explosives
- Aluminum sulphate
- Tanning materials
- Chlorine and Soda

The majority of these chemical products, especially protective chemicals, is still imported by the three countries. Their share is quite significant on their balance of trade. So a need for common development of these industries can be achieved, if the actions of the three countries were coordinated. These industries are characterized by high captial intensive, and large scale production which can be viewed on the regional scheme.

The development of such industries will have an effect in the following existing industries in the three countries.

o Petroleum refining industries

- Distillation of fuel oil
- Lubricating oil and greases
- Paving and roofing materials

o Basic Chemical Industries

- Acids
- Alkali
- Organic Chemicals

o Chemical Products Used in Manufacture

- Synthetic fibers
- Plastic material
- Dry colors

o Finished Chemical Products

- Drugs
- Soaps
- Detergents
- Cosmetics

5.1.3 Manufacturing Industries

The potential for manufacturing industries does exist. As shown in Chapter III, the three countries realized a substantial increase in the development of manufacturing industries. By the year 1980, the shares of metal products and machinery on total imports will be respectively: 8.2% and 17.9% for Algeria, 5.7% and 32.6% for Morocco, 4.7% and 27.3% for Tunisia. For the period 1967-70 the imports of manufactured goods increased by 29.8% for Algeria and 15.2% for Morocco. Tunisia showed stable imports. The highest priority in the industrial integration must be given to the following industries:

o Machinery Industry

- Mechanical and Electrical Machinery
- Machinery and Appliances
- Agriculture Machinery
- Textile Machinery

o Metal Industries

- Metal Containers
- Metal Furniture
- Household Equipment
- Tools

o Transport Equipment

- Railway
- Aircrafts
- Boats and Ships

The development of these industries must be supported by iron and steel work plants. This later requires high investment, and are characterized by large economies of scale. The production costs of the commodity may range from 70 dollars/ton to 350 dollars/ton respectively from the simple re-rolling works to making flat works. The Algerian iron and steel complex can satisfy the needs of the three countries. The capacity of the plant is up to 1,300,000 tons. The domestic demands for Algeria, Morocco and Tunisia are respectively; 500,000 tons, 370,000 tons, 186,000 tons. So Algeria can supply the bulk input for these industries. Morocco and Tunisia can specialize on other specifc products.

5.1.4 Electrical and Electronic Industries

In the area of electrical and electronic industries, the Maghreb countries have already achieved the installation of industries producing some electrical components and mechanical parts. The future prospects of cooperation will be based on the joint development of electronic parts, which are primarily based on electric circuits. This is represented by the production of electric statistical machines, electro-medical apparatus, electronic computers.

The electrical and electronic industry is a high capital

intensive technology, and also mass-production industry. So the needs for joint capitals, skilled labor and bigger market are desirable. The increasing needs of the area require more joint industrial activities.

The electrical machinery showed a substantial increase in the imports for the period 1967-73. The imports went up from 4.44% to 6.38% of total imports. For the same period, Tunisia and Morocco showed a decrease in their imports (see Table on imports commodity groups). This decrease can be justified by the starting production of the installed electrical plants in the two countries.

The industrial consumption of electronic products in the year 1980 can be synthesized as follows:

- o Generators, Transformers and Motors, 70 million dollars
- o Control Panel, and Switchboards, 50 million dollars
- o Computer and Statistical Machines, 15 million dollars
- o Miscellaneous Equipment, 15 million dollars
- o Welding Equipment, 4 million dollars

Table 42 illustrates the allocation pattern of industries taking into account the existing industries in the area.

5.1.5 Textile Industry

The textile industry has been given priority in the earliest plans of development of the Maghreb countries. This industry has been viewed as having a big potential to absorb unemployment. In Morocco, the textile industry meets about 30% of local demands. Tunisia imports many clothing textile products from overseas. The enlarged role of urbanization and changing fashions had an effect on the clothing industries in the Maghreb countries. The demand for textile products

Table 42. Electrical/Electronics Industry Allocation Within the Meghreb Countries

Country / Category	Algeria	Morocco	Tunisia
Production of Electronic Components			- Radio and Televising receiving equipment - Communication equipment - Electro-medical apparatus - Cathode tubes, resistors & electronic coils - Electronic statistical Machine
Production of Mechanical Component	-Electrical Industrial Apparatus - Household Appliances - Electro-Mechanical Appliances - Electrical Refrigerators/Heating - Household Laundry Equipment - Vacuum Cleaners - Sewing Machines		
Assembly of Consumer Products		-Electro-Magnets, Electrical starting & ignition -Electric lighting and wiring equipment. -Electric welding equipment -Vehicular Lighting -Generators, Motors, Industrial Controls Transformers	- Electrical Welding Equipment
Assembly of Industrial Equipment	- Radiographic X-ray - Alternators - Electrical Machinery - Equipment and supplies - Wires - Storage batteries (dry and wet)		

by the industry, agriculture, households, commerce and other sectors is increasing.

More coordinated efforts in the Maghreb are needed for the development of industrial hose, belting, bandings, tapes, jute, bags, bagging materials.

The total market by the year 1980 is estimated to be around 978 million tons for the area. The per-capita textile availability is expected to increase respectively: Morocco from 21.64/m^2 in 1975 to 22.74/m^2 in 1980, Algeria from 17.77/m^2 in 1975 to 18.68/m^2. The per capita textile availability for Tunisia will go from 24.70/m^2 in 1975 to 26.63/m^2 in 1980.

The development and coordination of these industries will stimulate the already existing industries such as:

- Yarn Mills, wool
- Thread Mills
- Lace Goods, paddings and upholstery filling.
- Yar, spinning mills
- Knitting mills

Table 43 shows us a breakdown of the textile industry.

5.1.6 Refractory Products Industries

The production of these products is composed of: refractory fire clay, magnesite, chromium-magnesite, solimite, Quartz, and graphite. Cooperation in the production of these products can be given attention because of the increasing needs of industries using such inputs. The industries which utilize these products are: metallurgy, building materials industries, glass industry, aluminum

Table 43. Breakdown of 1980 Projections of Textiles

	Algeria	Morocco	Tunisia
Domestic Supply of Personal 1964 Textiles (Metric Tons)	27,000	36,408	15,932
Domestic Supply of Personal 1980 Textiles (Metric Tons)	52,615	70,000	29,194
Rate of Conversion Used m^2 per Ton	6,500	6,500	6,200
Proportion of Cotton %	40	35	40
of Rayon %	40	48	25
of Wool %	5	7	20
of Synthetic %	15	10	15
Domestic Supply of Personal Textiles to Fiber: (Metric Tons)			
Cotton	21,046	24,500	11,676
Rayon	21,046	33,600	7,299
Wool	2,631	4,900	5,839
Synthetic	7,892	7,000	4,378

Source: United Nations Economic Commission for Africa.

industry and the energy sector. Table 44 illustrates the present situation of this industry.

Table 44. Capacities Needed for the Area 1980

Country	Existing Capacities (Tons)	Requirement For Refractory Products 1980	New Capacity Required	Proposed Plants Free Clay	Other
Algeria	-	37,000	37,000	20,000	20,000
Morocco	12,000	38,000	20,000	6,000	15,000
Tunisia	-	18,300	18,300	10,000	10,000

Algeria and Tunisia, as shown in the table, do not have existing plants to produce such commodity. By the year 1980, the two countries will need respectively 37,000 tons and 18,300 tons, to satisfy the internal needs of their industries using this kind of products. So it is necessary for these countries to coordinate their efforts and complement each other in the area. The existing industries need more improvement. For some of the products, deposits are unknown. A common initiative, to carry out geological investigation to determine the deposits of these raw materials has to be considered.

5.2 Other Industries

o Power Energy

In Algeria, from 1970-76, the electricity production increased at an average rate of 17.2%. About 90% of the electric power is thermally produced. The domestic natural gas, which is very cheap, provides the major input. Tunisia had this rate of production for 1974:

Thermal Station	288 m/w
Hydraulic Station	28.8 m/w
Diesel Thermal Station	15.6 m/w
	332.4 m/w
Self Production	50.0
Total Capacity	382.4

Some comparative studies done in the Maghreb, have shown that Algeria has a comparative advantage cost producing electricity. The comparative costs are determined as follows:

Algeria	34.40 dollars for the production of 100 kwh
Morocco	41.30 dollars for the production of 100 kwh
Tunisia	36.20 dollars for the production of 100 kwh

Because of its lowest production costs, Algeria already supplies electricity to the southern cities of Tunisia and Morocco. The cheap production cost of the Algerian electricity will contribute to other industries, which use electricity as primary inputs (aluminum).

o Forestry Industry

The three countries taken individually present a limited forest resources. So to exploit adequately and efficiently such resources, it is necessary to consider the region as a whole. This will help to eliminate the technical constraint until now represented by the manufacturing and marketing aspects. The common exploitation of these forest resources will generate more dynamism within the pulp and paper industries. This also will reduce the dependency on foreign imports of different kinds of paper and newsprint, as mentioned in

Chapter IV.

In 1980, the domestic demand for paperboard and pulp paper is estimated to 18,805 dollars for Tunisia, 53,294,000 dollars for Algeria, 38,458,000 dollars for Morocco. The majority of the domestic demand for the three countries is still covered by imports. The imports for the period 1980 for the pulp paper are estimated to be: 32,260,000 dollars for Algeria, 24,491 dollars for Morocco, and 16,250,000 dollars for Tunisia. So the development of this industry will save the area 73,001,000 dollars for foreign exchange.
The cooperation in this field is desirable, since the domestic demands are increasing because of the linkages to other industries.

The area represents the following characteristics in the Forest Industry:

Algeria 1,368,000 hectares of conifers and 1,691,000 Hardwoods

Morocco 1,369,000 hectares of conifers and 3,176,000 Hardwoods

Tunisia 387,000 hectares of conifers and 404,000 Hardwoods

The three countries do have a significant forest resources. The possibility of common development will encourage the creation of other industries using the forest product as input in their process, especially the "cellulose industry".

The development of the forest industry will affect the existing industries such as: pulp mills, converted paper and paperwood industry, papers containers and boxes, packaging industry.

o Food Processing Industry

The Maghreb countries do not produce enough nutrients to satisfy

the needs of the area. The joint efforts of the three countries can improve the output, the methods of utilization, and the methods of preservation and storage. The development of the food processing industry can be achieved by a common acquisition of new processing and packaging technologies. The integration of this sector will stimulate new research programs for the marketing of meat products, edible oil, fruit and vegetable products, fish products, and drinks. The population of the area has a traditional system of consumption, which is characterized by the preference for fresh vegetables, meat, and rejection for canned products.

Morocco has higher potential in the food processing industry. This reflects the priority given to this sector during the earliest plans of development, and also the number of hectares devoted to agriculture. Approximately 40% of the total Moroccan land area is agricultural, Algeria has two thirds of her land covered by the desert. For this reason, Morocco has the most leading industries in the processing of agricultural products and fish. With 7.8 million hectare under cultivation, Morocco has 325,000 hectare irrigated. Principal products of the food processing industry are: refined sugar, flow, canned vegetables and fruit (exports), fruit juice, vegetable oils (exports) wire and tobacco. Tunisia has a small potential in this sector because of her population size, but exports also some agricultural processed products.

The list of other industries, which can be developed commonly between the three countries, can be very long. The industries

identified above are not exclusive. Some other industries can be of regional interest, such as: Building material industry, pharmaceutical industry, development of nuclear and solar energy.

5.3 Five Stages Approach to the Industrial Integration

The allocation of industries within the Maghreb countries can be achieved by detailed feasibility analysis for each industrial sector, and industry. A systematic approach to carry out such analysis should be developed as follows:

Five stages approach

- o Estimate the demand of each country for a given industrial product.
- o Estimate the costs of production of the selected products in the three countries
- o Estimation of the costs of transportation (from the production point to the consumption point).
- o Find minimum cost location of plants in the Maghreb for each product.
- o Estimate welfare benefits.

CHAPTER VI

THE IMPACT OF INDUSTRIAL INTEGRATION ON THE MAGHREB COUNTRIES

6.1 Economic Prospects of the Integration

The integration of the Maghreb countries will promote a rapid, self-sustaining growth. However, the net benefits from integration are very difficult to assess. For the purpose of our analysis, we shall consider two hypothetical alternatives which can characterize the economic development path of the Maghreb countries. The question of whether or not the integration of the Maghreb is likely to be beneficial depends upon which of the two following alternative situations is considered to be more adequate and realistic in relation to the needs of the three countries.

The first alternative situation reflects the present economic development option followed by the three countries, in the absence of integration. The Maghreb countries are putting more emphasis on the strategy of national import substitution. They are moving further into heavy and highly technological industries. As noted in Chapter IV, these technologies absorbed a few workers, and created greater dependency on technical assistance (consulting firms).

If the strategy of import substitutions fails in the absence of integration, the Maghreb countries can opt for a second alternative characterized by a shift from highly capital-intensive toward labor-intensive exports. This alternative will focus on the promotion of exports.

The three countries have a high agricultural potential which can be viewed as a viable strategy for exports; however, new agricultural implementation policies are needed in such areas as tariff structure and price structure.

The main economic benefit of integration will be the harmonization of the industrial strategy pursued in the three countries.

6.2 Dynamic Effects of Integration

The integration process will generate dynamic effects on the economies of the three countries. It will promote the economic welfare, stimulate growth (outward movement of production alternatives), provide market extension, create economies of scale, and encourage product innovation.

Industrial integration will allow a shift from traditional to dynamic industries. The former industries are generally characterized by small-scall plants because of the narrowness of the market. In this situation, the costs and forces appear to derive from institutional factors (subsidies) rather than from the technical and economic features connected with the limited size of the domestic markets. The dynamic industries are characterized by an attempt to promote specialization and trade on a regional scale.

Industrial integration will encourage horizontal and vertical specialization:

- Horizontal specialization, or reduction of the number of different products produced in single plant, may be important to new industries such as machine tools and shipbuilding, as well as in

textiles, clothing, etc. Horizontal specialization enables the lengthening of production runs, allows the use of more specialized machinery, and increases efficiency.

- Vertical specialization currently is important in industries producing durable consumer goods, machinery, and transport equipment. Through vertical specialization, the three countries can interchange mechanical parts, components, and accessories in the case of the electrical, electronics, and automobile industries.

The integration process will have immediate impact on economic growth rather than trade creation.

6.3 Creation of the Regional Common Market

A regional market of 45 million people is very significant for the area. This will encourage the development of new industries which until now have not been considered. To achieve such an objective, the three countries are required to establish a common policy regarding external tariffs, as well as tariff reduction. The three countries must define an industrial program comprehending both national and regional interests, listing all the priorities and the products to be produced. This must be done on the basis of comparative advantages. The existence of a regional market will allow the existing industries to run at full capacity. This will solve the constraint of economies of scale represented by the undesirability of highly capital-intensive technologies.

6.4 Trade Aspects of Integration

Many economists argue that minor gains can be expected from liberating trade in traditional products among developing countries. The reason for this is that the perpetual costs in terms of dislocating existing industries will largely affect the potential benefits for increased competition and specialization, longer production runs, and lower prices to the consumer.

Trade liberalization is supposed to stimulate the industrialization of the Maghreb countries by providing market extension on a reciprocal basis. The intergration scheme will generate greater gains from free trade, because the more the member countries' industrial structures are similar but potentially different, the more stringent are production costs for similar goods in the different countries. To avoid an unfair allocation of resources, special concessions can be considered for less developed countries to allow them to catch up in the given sectors. A compensating system must be carefully studied to prevent any reallocation of industries from less to more efficient producers within the area.

Free trade might increase inequality inside the region, because it cannot always ensure reciprocity of benefits to all participants. To minimize such effects, policies can be defined to ensure fair distribution of the profits within the Maghreb countries.

In any integration process, trade creation and trade diversion are expected to occur. In the case of the Maghreb countries, the integration will stimulate more trade creation.

In addition to the petroleum bought from Algeria, Morocco and

Tunisia are still buying additional petroleum from outside the area.

Morocco's petroleum imports came from Iraq (58%), USSR (26%). In the framework of integration, the additional foreign imports will be substituted by Algerian petroleum (minimum cost of transportation).

Trade creation will permit the existing industries to run at full capacities. For example, in Algeria, the domestic consumption of steel is around 60,000 tons per year, but the plant capacity is over 1,200,000 tons per year. The domestic demand for the same product is respectively 400,000 tons per year in Morocco and 200,000 tons annually for Tunisia. Thus, the Algerian plant by itself is sufficient to satisfy the needs of the three countries. Trade creation will affect the industries presented in Table 38 (rate of underutilization).

In short, industrial integration will increase the entire trade of the Maghreb countries.

6.5 High Investment Costs

As was noted in the introduction, the industrialization programs are very costly. Such programs require a heavy capital inflow. The amount of capital needed is related to plant size, type and location. High investments are generally made by the governments. The Algerian government finances in their entirety (100%) petrochemical plants, steel working plants, and some other highly capital intensive industries. For example, a liquefied natural gas (LNG) plant can cost aroung 1 billion dollars to build, a refinery may cost between 300 and 400 million dollars, a cast iron and steel foundry may cost aroung 110 million dollars, and a cosmetic plant can cost aroung 80 million dollars. The countries which do not have such financial resources to support an industrialization

program will remain dependent on imports for given commodities.
The second major source of financing, and one which is extensively used by the Maghreb countries, is to contract loans from foreign governmental or international banks. Some experts suggest labor-intensive technologies as a solution to offset the chronic shortage of capital. But this solution is feasible only if there is enough qualified labor. The market area to be served by the different industries cannot be widely spread, especially in metallurgic operations; otherwise, transport costs will become very high.

Foreign intervention is very limited in the Maghreb countries. In Algeria around 90% of the industries are in the hands of the State. Morocco and Tunisia are more liberal; approximately 60% of the industries in Morocco and 82% in Tunisia are handled by State-owned companies.

With the allocation of the production factors, which are different between the three countries, certain industries are more feasible in one country, than in the other. For example, the energy production has been found cheaper in Algeria. The cost of production is 0.045 French Franc/Kwh, in the North and 0.014 French Franc/Kwh in the Sahara. The cost of production for the same commodity is respectively, 0.05 French Franc/Kwh and 0.5 French Franc in Tunisia.

6.6 Creation of a Regional Bank

The creation of a regional bank seems necessary. The functions of the bank will be as follows:

- Provide credits for the member countries
- Channel financial resources from outside and within the area

- Facilitate financial transactions
- Means to maintain permanent control
- Means to promote, and supervise industrial development with regard to the industrial program considered
- Control unfair practices
- Strategic tool, to put pressure on the member countries
- Compensate losses resulting from the integration process
- Promote transaction in area currencies

Other benefits

- Develop cooperation in Industrial Research
- Increase bargaining power in international forums
- Avoid competition among the three countries when dealing with the European Economic community
- Benefit from natural resources of the other members
- Optimum allocation and utilization of resources
- Create political stability in the area
- Generate self-sustaining growth
- Encourage shift from import substitutes
- Open new avenues for regional import substitution
- Increase employment in the industrial sector
- Develop financial cooperation, and technical assistance
- Harmonize monetary, financial, and fiscal policies

Limitations of the integration process

- May dislocate existing industries by increased competition and specialization
- Divert trade from foreign suppliers to domestic producers

- Intra sector specialization may be disrupted by the Free Trade
- Problems involving sovereignty
- Political differences
- Degree of state participation in the economy

6.7 Analysis of Investment Codes in the Maghreb Countries

Increasing public interest in industrialization is the enactment of investment codes by the three countries, to ensure a rapid inflow of capital in the industrial sector. Provisions are made for a wide range of benefits, including exemptions from taxes on income and profits, provision for arbitration, guarantee against unfair nationalization measures, as a means of encouraging existing industrial enterprises and attracting new ones. The beneficiaries under these codes are often certain industries which are considered as of especial importance in national development plans.

The Algerian government's fundamental determination to control all significant aspects of the country's economic life is clearly reflected in its policy toward private investment, both foreign and domestic. Algerian's approved enterprises, being those that have a satisfactory financial plan, use modern or appropriate equipment, and which, by reason of their location or sector activity, contribute to the economic development of the country in accordance with government plans and programs, primarily within the industrial sector. The governement believes that foreign private investment would be useful to Algeria in gaining needed access to high technology, skills, specialized training for Aglerians, credit facilities, and

overseas markets. Limited tax advantages can be accorded to private investors if the Algerian National Investment Board determines that such benefits are necessary.

Moroccan code, identifies special enterprises, mainly industries, but also including insurance, banking, transport. The code reserves the benefits that may be accorded under the "all encouragement measures", for certain basic industires only, likewise mineral chemical, refineries indsutries. The basic incentives included in the code are related to the rate of depreciation, maintenance of tax-free reserve for the acquisition of new euipment up to level of 40% of the total value of approved investment and 50% of net annual profits, guarantee a partial repatriation of the capital, partial or total exemption from custom duties on imported tools, machinery equipment. The code also allows reduction on license taxes for new construction and equipment.

Tunisia's investment decree, which became effective in 1963, deals principally with industrial development. The code gives priority to industries which are less exposed to foreign competition, and which process semi-finished goods in replacement of imported finished consumer goods and employ local labor. The 1972 code grants liberal concessions to investors in export-oriented manufacturing industries. The code also accords some varying incentives with regard to the plant location and the number of jobs created. For the period 1969-72, Tunisia had around 30 million dollars in new foreign direct investments, mostly in the petroleum sector.

CHAPTER VII

CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusion

The benefits from the industrial integration in the Maghreb countries are multiple. The common development of the industries presented in the previous chapter (V), will present the following advantages:

1). Economic gains in investment expenditures, the flow of industrial investments needed will be less than the investment for each industrial firm planned and located in isolation

2). Development of economies of scales due to the market size of the three countries taken all together.

3). More efficient production due to the gains of specialization

4). Organization for common managerial and infrastructure facilities in the area

5). Coordination and harmonization of the natural resources within the area

The industries of interest for the Maghreb countries are:

o Fertilizers Industry:

Triple superphosphate

Diammonic phosphate

Urea ammonia

Ammonium nitrate

o Petrochemical Industry

Polymers

Aronatics

Polyester fibers

Plastic transformation

Protective chemicals

o Manufacturing Industry

Machinery industries

Metal industries

Transport equipment

Electrical/electronics industry

Refractory products industries

Textile industry

o Other Industries

Electrical power production

Food processing industries

Forest industry exploitation

New sources of energy (nuclear and solar)

The industrial integration of these sectors within the area, will generate the growth of other sectors such as

- Agriculture - Transportation
- Communication - Trade - Tourism

To determine the comparative advantages of each country, five stage approach should be considered:

- o Estimate the demand of each country for the products of the industries listed above.
- o Estimate the costs of production for these products within the Maghreb countries
- o Estimate the costs of transportation from the production sources to the different market places
- o Find the minimum cost location for these industries
- o Estimate the welfare benefits of this industrial integration

The integration scheme will open new industrial research opportunities:

- o Application of science and technology to more effective use of raw materials
- o Research work in the utilization of raw materials
- o Develop new sources and types of raw materials

Industrialization is viewed as the key to economic development in the Maghreb countries. If these countries want to gain more by pushing industrialization beyond certain points, they must coordinate their efforts and avoid wasting of resources. The present individual status of the Maghreb is characterized by uneconomic size industries operating below capacity, and by high production costs. The three countries must search ways to encourage the coordination and utilization of their resources on the regional scheme. This can be achieved through a comprehensive approach of economic integration.

7.2 Recommendations

The industrial integration in the area can be achieved by considering the following steps:

- Extensive survey of the industries, sector by sector, in the area
- Extensive survey of the natural resources of the area
- Feasibility studies
    - o Detailed and comparative industrial studies to allocate resources
    - o Detailed study on the industrial needs of the Maghreb
    - o Study of the agricultural sector and its potential market absorption of the industrial products
- Harmonization of fiscal, monetary, and commercial policies
    - o Establish a free trade within the area (promote intra-trade)
    - o Establish a common policy for external tariffs
    - o Harmonize the national development plans of the three countries
    - o Promote agreements on transports and communications
    - o Create a common bank
- Provide adequate manpower training to satisfy the growing needs of the industries
- Promote industrial research
- Establish industrial standardization in the area
- Create a favorable environment for the promotion of industrial development

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